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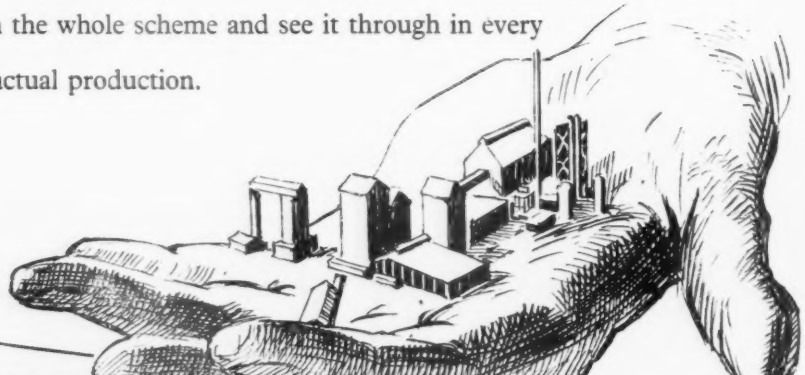

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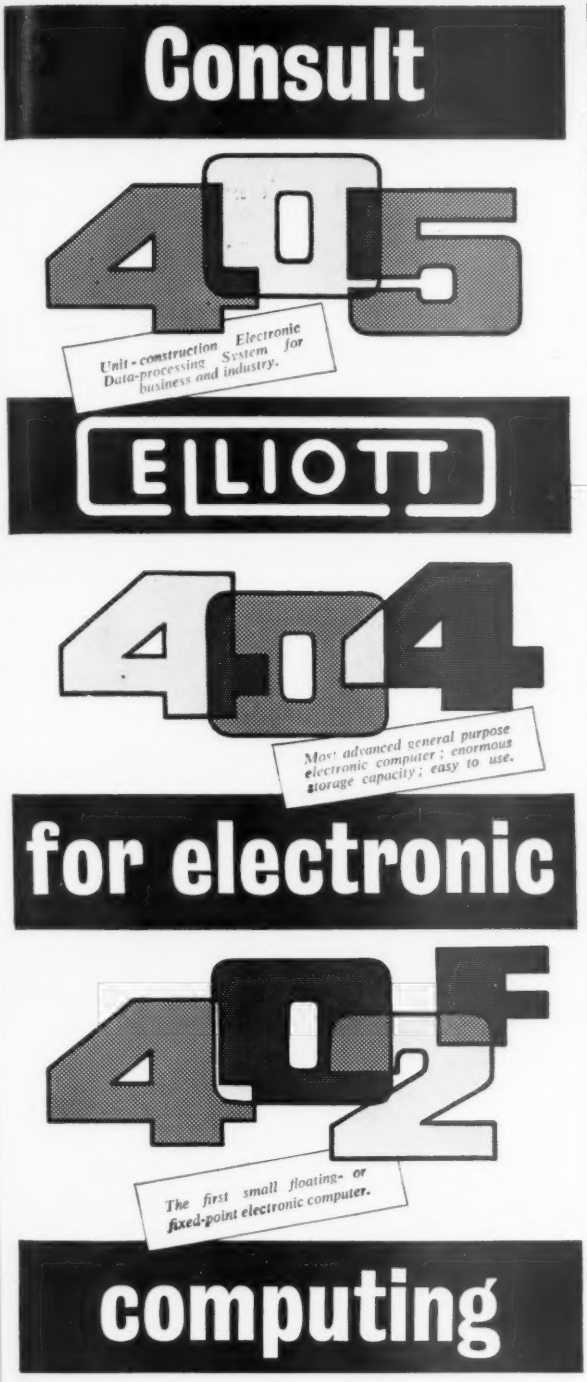

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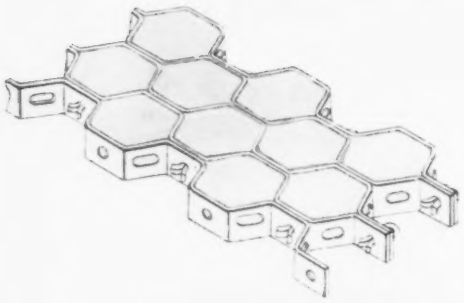
CORROSION in Oil Refineries

IN FIVE CONTINENTS



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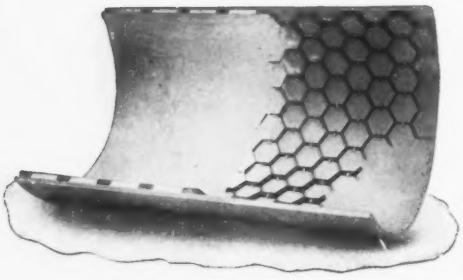

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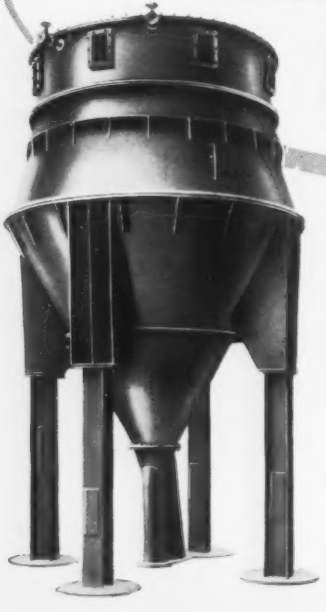

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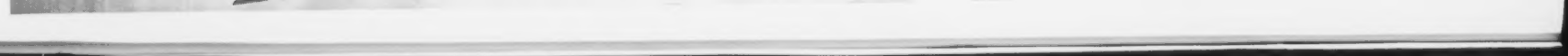

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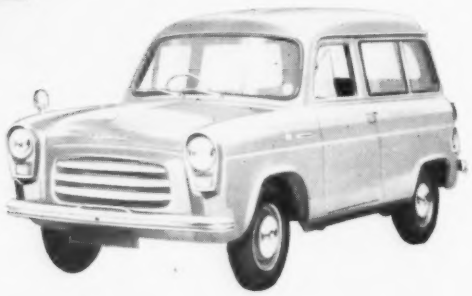

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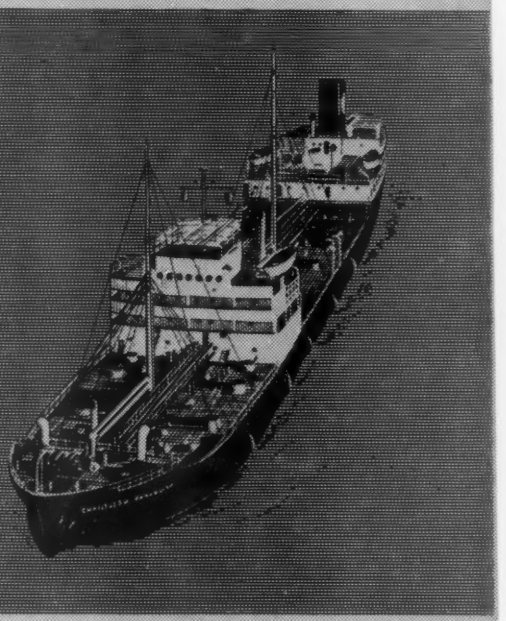

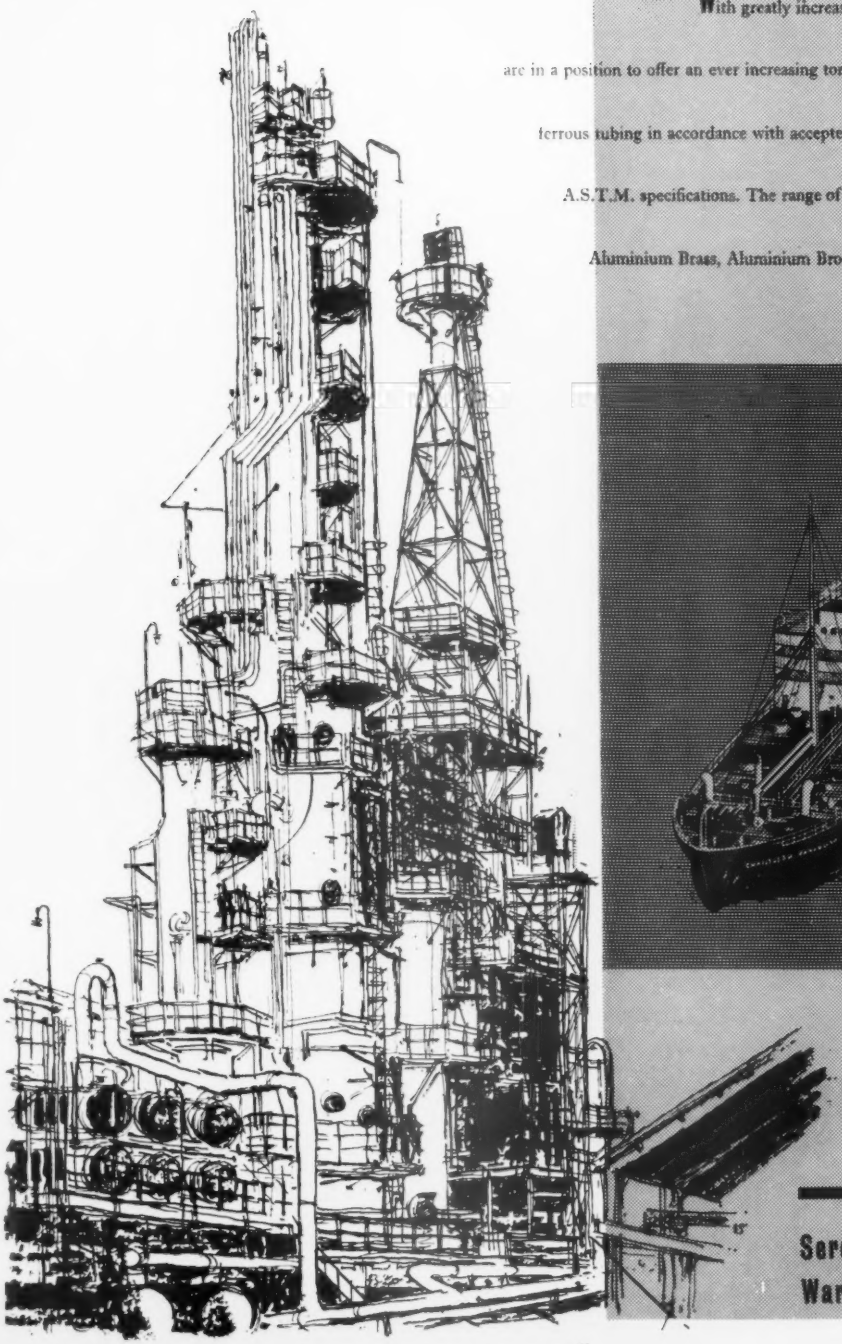

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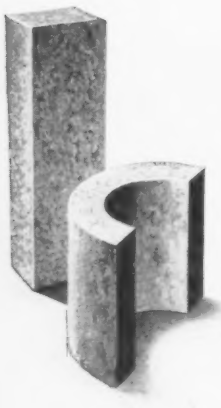

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THE INSTITUTE OF PETROLEUM
REVIEW

Volume 10, No. 120 December 1956

Honorary Editor: E. B. EVANS, M.SC., PH.D., F.R.I.C. *Hon. Associate Editor:* D. L. SAMUEL, B.SC., A.R.I.C. *Editor:* GEORGE SELL

Ten Years Old

With this issue the IP REVIEW *is ten years old. It was born in* 1947 *when, owing to paper rationing, it was only possible to obtain an average of* 2 *cwt of paper a month. To-day, the monthly usage of paper is over three-quarters of a ton.*

It was conceived as the result of suggestions from members which came before the Publications Committee in March 1946. *These referred to the Institute Notes which were then included in the Advertisement Section of the Institute's* Journal. *It was thought that these notes could with advantage be extended to cover a much wider range of news and information, and might even include short articles of general interest.*

Publications Committee were quick to see the possibilities of these suggestions and the need for extending the Institute's activities in the ways indicated. A small ad hoc committee consisting of H. Hyams (Chairman), Dr L. Ivanovsky, J. S. Parker, and E. Thornton with George Sell, the Editor, as Secretary, was appointed to consider the whole matter. This small committee's recommendation that a new monthly periodical should be published was unhesitatingly endorsed by Publications Committee.

Not much time was available before the first issue was due in January 1947 *and a number of difficulties had to be surmounted. These included arrangements for paper supply and for printing, decisions on size and lay-out and, not least, ensuring that a steady flow of contributions and other material would be available.*

In its early form, and in fact for its first seven years, the IP REVIEW *was a pocket size publication. Gradually, however, it became obvious that not only was it popular with members but that it was earning wide recognition as a reputable oil journal. It was, therefore, decided that its page size would have to be increased and so, in January* 1954, *the present style of the* IP REVIEW *with its distinctive cover was brought into being.*

Since 1946 *the oil industry has developed greatly. The world production of oil has nearly doubled in the last* 10 *years; supplies from the Middle East have increased considerably in importance and a large refining industry has been built up in Britain. The* IP REVIEW *has kept pace with these developments and will continue to do so by providing topical information, news, and articles concerning events in the industry. Improvements in lay-out have been made and the Publications Committee and Editorial Staff are constantly seeking to improve the interest and value of this publication. We look forward to an even more successful Second Decade.*

Photograph by Walter Bird

Harry Hyams receives the Eastlake Medal

A large gathering of members of the Institute accorded a great ovation to Harry Hyams, when, on 3 October, the Rt. Hon. Lord Geddes (President) presented him with the Eastlake Medal.

In presenting the medal, which is given for long and meritorious service to the Institute, Lord Geddes said that Mr Hyams had served continuously on the Council since 1944 and for two periods (1948-50 and 1952-5) as a vice-president. He had given valiant service to the cause of international co-operation in the standardization of methods of testing petroleum and its products; and particularly in the field of measurement of bulk quantities of petroleum, where his work contributed largely to the publication of the ASTM/IP Petroleum Measurement Tables.

Also, in the petroleum measurement field, Lord Geddes recalled that Mr Hyams was chairman of Sub-Committee No. 1 (Measurement and Sampling) from its appointment in 1943 until 1955 and chairman of its predecessor from 1940.

Lord Geddes cited the committees on which Mr Hyams had served as a Member of Council of the Institute. These were as follows:—

(*a*) Finance, as Chairman 1949-55;
(*b*) Branches, 1951-4;
(*c*) By-Laws, 1946-53 and as Chairman 1946-9;
(*d*) Election, 1948-9;
(*e*) House, 1944-55;
(*f*) Public Relations, 1947-51;
(*g*) Publications, 1944-51;
(*h*) Standardization, 1944-55 and Honorary Member from 1955.

Lord Geddes then presented the Eastlake Medal to Mr Hyams.

In thanking the Council for the Award, Mr Hyams said he was proud to be the third recipient of the medal, and to follow in the footsteps of two such well-known and highly respected members of the British petroleum industry as G. H. Coxon and J. A. Oriel. Continuing, Mr. Hyams said that it was James Kewley who had inspired him with the work and ideals of the Institute and who had encouraged him to follow in his footsteps. He also said how much he owed to his Company who had encouraged him at all times to devote himself to those sections of the Institute's interests where he felt he could be of the greatest service to the Institute and through it to the industry.

Mr Hyams said he was firmly of the view that the Institute had still much to do on behalf of the British petroleum industry in further developing collaboration with like bodies in different parts of the world. He affirmed that much had already been done in friendly co-operation with the U.S.A. but Britain was still only on the fringe of the possibilities. Moreover, he felt that the Americans looked to the Institute to act as the link between them and the Continent of Europe, where it had, so far, only scratched the surface of co-operation. The name of the Institute throughout the world had never stood higher, and it should accept this important challenge with enthusiasm and with its usual sound judgment. On these matters Mr Hyams said he remained the same old idealist, even if experience had hardened him into a patient realist.

Finally, Mr Hyams said that his affection for the work and those constituting the Institute would ensure that so long as time, energy, and circumstances permit he would continue to find happiness in remaining at the Institute's service.

Personal Satisfaction from Service

At the Autumn Council Dinner, which followed the presentation of the Medal, Mr Hyams said that those in the industry who had not been privileged to take an active part in the work and development of the Institute could not possibly

Harry Hyams receives the Eastlake Medal from the President

realize what they had missed. He, personally, preferred to say that he *belonged* to the Institute rather than that he was a member of it. In using the word *belonged*, Mr Hyams said he meant it in the sense that he was closely attached to it. In this context there was something more than mere sentimentality in the word *belonged*. He belonged to the industry and he belonged to the Institute, because in working for both he got that personal satisfaction which results only from the attachment and affection from belonging to, or being part of, a whole happy family. Continuing, Mr Hyams said that if over the 37 years during which he had belonged to the industry—if all that was true—how much more was it true of one's association with the Council of the Institute. The happiest years of his industry association had been those when he had worked with and had enjoyed the company of his Council colleagues.

"We need no club of any kind for promoting personal friendships and for co-operation in the work in which we are engaged on behalf of our Institute. The fact that so many of us are engaged in healthy and strenuous competitive work does not affect the splendid, friendly, and co-operative efforts which we make through the Institute for the industry as a whole and for its members", said Mr Hyams. To his mind and in his personal experience no club could claim to have been the means of developing such close and sincere friendships—irrespective of the competitive signs displayed by the employers—as had the Institute and in particular its Council. That was another reason why he had over the years been proud to belong to the Institute and to have been able to count so many of his personal friends among the members of the Council.

From time to time he had voiced his view that there was still much for the Institute to do on behalf of the industry and its members. The Institute had accomplished a great deal and its name stood high all over the world. In so far as it lay in his power, time, and energy, Mr Hyams said that he would always be proud to be associated with this valuable work of development. The work had always been to him a labour of love. That Council had seen fit to recognize his contribution as meriting the award of the Eastlake Medal was a source of great pride and gratification to him.

Mr Hyams then thanked the President and Council and expressed the hope that he might still be of service to the Institute for many of the years of its prosperity which he felt still lay ahead.

Two Eastlake Medallists together—H. Hyams and G. H. Coxon

★ ★ ★

New Oil Trade Link

A new oil trade link between Swansea and the west of England began on 8 October when the tanker Shell Steelmaker *sailed from the Queen's Dock, Swansea, with the first cargo of oil products for the new Shell-Mex and BP oil distribution installation on the River Parrett, near Bridgwater, Somerset.*

Commenting on the occasion Roy Jones, manager, Swansea Branch, Shell-Mex and BP Ltd, expressed his belief that the new trade between Swansea and the West Country would help to lead the two areas to even greater prosperity.

Oil had come to play an increasingly significant part in the trade of Swansea. In the first eight months of this year he affirmed that 2¼ million tons of petroleum were imported through the port and more than 1¼ million tons of refined products were re-exported.

Continuing, he said there had been much recent comment on the BP Company's proposal to build a new oil tanker terminal at Angle Bay on the south shore of Milford Haven, which would be connected by pipeline with the BP refinery at Llandarcy. The terminal would provide berthing and discharge for the very large tankers now being built for the BP Tanker Company, which cannot be accommodated at Queen's Dock. The pipeline would be capable of carrying 5 million tons of additional crude oil into the Swansea area and, if this materialized, it followed that the amount of refined products to be re-exported, probably through the Swansea Docks, must greatly increase.

Mr Jones explained that his company employed tankers of 1200 and 750 tons to feed coastal installations and depots, and smaller vessels of 400 tons for estuary and river work. Tankers such as these use the new oil jetty in Queen's Dock which was opened earlier this year.

Bridgwater Installation

Oil products are being shipped to Bridgwater in the 400- and 750-ton tankers, which berth at the newly constructed 340-feet long jetty on the River Parrett, and pump their cargoes half-a-mile to the installation, through four eight-inch underground pipelines. The installation has been equipped with stripper pumps so that these lines can be cleared after each discharge.

Formally opened by Gerald Wills, M.P. for Bridgwater, who pressed a button on the main gantry and started the flow of motor spirit to a road tanker, the Bridgwater installation will distribute all the Shell and BP grades of motor spirit, kerosine, derv fuel, gas oil, and Britoleum fuel. This is reported to be capable of dealing with the work of ten old depots.

Refinery Utilities Symposium

This is the first of three papers presented to the Stanlow Branch on 16 November 1955. The remaining papers will be published in subsequent issues of the IP Review.

Water Supplies

By **G. W. POWER***

The operation of an oil refinery depends upon a reliable water supply as much as upon any other factor and yet this important service appears sometimes to be accepted as an incidental. Because of the need for an unfailing supply the service must be of unquestioned reliability, although this may necessitate considerable expenditure, and either an inexhaustible supply must be developed, or available, or adequate storage reservoirs must be provided. Furthermore, machinery and equipment must be duplicated to some extent to ensure that the failure of one unit does not spell disaster.

In general it will be desirable to ensure that with the largest normal pumping unit out of commission the remaining pumps will furnish all the water required, including a fire fighting flow, for about 12 hours.

Services Required

The water requirements of a refinery include cooling water, boiler and process water, drinking and other domestic supplies, and fire supplies; and whatever source is available the water, or some of it, will require treatment by straining or filtration, softening, and possibly chlorination. Pumps, service mains, and meters constitute the main works in ensuring the maintenance of an adequate supply.

Drinking Water

Wherever possible the drinking water will be obtained from a public service, thus relieving the management of the responsibility for purity; if such is the case an independent network of distribution mains is provided, meters being put in the lines for the purpose of checking consumption and preventing waste. Should a public supply not be available, water from a private source, such as a well, may be used for this purpose provided that the source has the approval, or has not received the disapproval of the local Public Health Authority. The availability of an alternative supply is in any event of considerable value, as even a public service is liable to interruption by mains failure.

*Lobitos Oilfields Ltd.

Water for Other Purposes

Water requirement for other refinery purposes will frequently be of such magnitude as to require a private supply which may be surface or ground water, either from a never-failing source or assisted by impounding reservoirs, obtained or distributed by pumping.

Quality Required

The filtration and treatment plant required will depend upon the nature of the source and the purpose for which the water is to be used if distributed by a separate or a combined mains system. The chemical purity of the water is important where this is to be used for process work as well as for cooling, for example in heat exchangers where the efficiency of the unit will have been designed for water of a certain standard of general purity and cleanliness. If the cooling water is hard, dirty, or corrosive, tubular heat exchangers will be affected: soft deposits are detrimental to heat transfer and brackish water may cause electrolytic action to be set up.

Where boiler water is concerned the treatment of feed water is at the boiler plant and the nature of the treatment will usually be decided after reference to one of the firms specializing in such work, and in consultation with the boiler manufacturers.

Quantity Required

The principal requirement of water for fire-fighting is that there shall be enough of it and no special treatment is required for this purpose.

The large water demands of a refinery, for cooling and fire purposes, are such that the availability of adequate supplies may play as considerable a part in the selection of the site for the refinery, as for a modern power station.

It is surprising that, this being so, the question of water supply appears sometimes as an incidental, being mentioned, after other plant has been most carefully designed and specified in detail, in a blanket phrase "estimate steam, water, and power requirements." The actual supply is taken for granted—in volume it may be 25 times that of the oil processed.

Pumphouse

The heart of the water supply system for the refinery is the pumping station. For, whatever the source, water in the mains will not be a "gravity" supply. Efficient observation, operation, and repair of this important plant calls for adequate space, for accessibility and convenience, around the equipment. Of this the space requirement should be ascertained from the pump manufacturers, if not known.

The general layout within the water pumphouse should provide for an economic arrangement of water, steam, and electric power lines within a well-lit and ventilated building encouraging careful operation. The pumphouse itself requires to be located with regard to the hydraulics of the distribution system, the possibility of future expansion, and, so far as can be obtained, absolute security against any possibility of interruption in service through fire or flood hazard. In a refinery pumping station, contrary to public service practice, security against interruption of the service will generally be provided by the maintenance of alternative motive power pumping units, *i.e.* mains electrical with steam or diesel driven emergency stand-by. Wherever possible suction lift should be avoided by installing the pumps in either a wet or dry well below intake water level; if in a dry well all risks of inundation should be covered. Should it not be possible to avoid suction lift reliable priming facilities must be available, foot valves being essential. The suction should always be immersed about four diameters and be away from the bottom of the suction well. Check valves are required on the discharge side to relieve the load on the pump when starting. Gate valves are required beyond the check valves to facilitate repair work and provision made to ensure the main gate valve not being closed when the pump is running.

In modern practice the centrifugal pump is pre-eminent as an efficient unit and if the main plant is electrically operated the emergency centrifugal pumps may either be direct coupled to diesel engines or to steam turbines connected to the main boiler house. In either case provision is made for automatic operation on the failure of the main plant. The centrifugal pumps best suited to refinery water services have characteristics which afford an efficient operating range.

The pressure in process mains not required to serve fire hydrants may be kept low and boosted locally when a higher pressure is required.

A number of pumps operating at the highest efficiency may be supplemented by a larger pump operating at different speeds.

Pipes

The distributing water mains may be cast iron, steel, reinforced concrete, plastic, asbestos cement. The extreme durability of cast-iron pipes under normal conditions is well established—that of plastic remains to be proved. Durability is increased by giving protection against corrosion and the life of buried steel pipes is greatly dependent on the protective coating. Concrete pipes are very durable when buried but are more suitable for long runs than for general refinery distribution systems. Plastic pipes, developed since the war, are establishing their value in competition with steel or asbestos cement and their resistance to corrosion is a valuable quality. Corrosion in steel pipes is countered by bituminous coating, wrapping with hessian, tarred asbestos, or paper felt. Also by the use of fibre glass cloth or glass felt in combination with bituminous coatings. An adequate and unbroken sheathing of bitumen is a very effective guard against corrosion but in all cases much depends on the care taken in applying the protection and on careful handling thereafter. Proprietary brands of wrappings, greasy or otherwise, are also available.

Cathodic protection of steel pipes is most suitable where a single line is to be protected and this specialist treatment is not usual inside refineries.

Jointing of Pipes

Whatever type of piping is used careful attention is paid to jointing. Ball and spigot joints in cast iron pipe may be lead jointed, rubber ring jointed, or be made with poured bitumen joints. Asbestos cement pipes are also rubber jointed, but the durability of rubber joints is open to question, particularly where petroleum products abound. Steel pipes are frequently joined by welding or by screw coupling; but the provision of flanged joints at intervals facilitates repair and renewal in due course.

Distribution System Layout

The layout of the circulating system for the cooling, process and drinking water supplies is designed on the normal principles applied to public service, or domestic systems.

The quantity, quality, and pressure required at each delivery point is obtained and the layout designed usually on a ring or on a tree system. Cross connexions may be provided on either of these to form a grid, and unless an entirely separate system of fire mains is provided, hydrant points as well as positions for connexions, valves, and meters are planned. The pressure in any main which is to be used as a direct fire-fighting source should not be less than 100 psi and no reliance can be placed on a main less than 4 inches for any hydrant. Preferably they should be located on mains of 6 inches and upwards. Fire hydrants should not be placed on dead ends which are liable to be frozen.

Inter-connexion of mains carrying water from different sources for different services must be avoided to prevent the possibility of pollution occurring.

Ageing

Mains sizes should be calculated on the basis of known and estimated future requirements plus fire demands and for normal rate of flow of 3 or 4 ft sec in the pipe line. Allowance should also be made for the reduction of flow which may be expected to occur with ageing of pipes up to, say, 30 years. Formulae give the basis for design sizes based on the theory of roughness and allowance must be made for bends, valves, tees, and changes in direction. Old records may give useful information concerning the effect of ageing in steel or plain cast iron pipes. An allowance of 10 per cent will probably be sufficient cover for cement asbestos and other non-ferrous pipes; cast iron pipes with spun cement liners and coated with bituminous paint are largely unaffected by age. The effect of slime may be ignored. It is advantageous, from an operating standpoint, to lay duplicate smaller lines in preference to one large arterial main. These lines may not be closely adjacent, but should be provided with adequate cross connexions.

The preliminary layout as designed will require checking back on assumed flows and head losses to ensure satisfactory pressures at all delivery points by adjusting line sizes.

Where the mains system is not designed to maintain full fire pressure at hydrants, under all operating conditions, mobile pumping units must be available, for boosting water pressures from hydrants, at all times.

Maintenance and Records

The efficient maintenance of the refinery distribution system will also depend on good record drawings being kept up to date. Where these are not available, valves are "lost", duplicated, or half-closed, and dead ends may be formed which could be joined or obviated.

The maintenance of the pipelines will include such operations as draining, flushing dead ends, scraping, and chemical cleaning. The location of leaks is frequently troublesome and difficult. Direct observation, sounding rod, draining and filling, listening, the introduction of colouring or radio-active tracer element are among the methods used.

Valves

Although maintenance of an unfailing supply has been referred to, provision must be made for the isolation of various sections of the refinery water distribution system and gate valves are required on all branches. The omission of valves where branches take off feeder mains can cause great inconvenience and provision of two valves should be made at a tee and three valves at a cross. Whilst inconvenience can be caused through a shortage of isolating valves, it is unlikely that there will ever be too many and in view of refinery developments it is well to provide additional tees and sometimes valves when laying new mains so that other branches may be laid without difficulty later. Valves should also be placed at intervals in long unbroken mains; in a refinery they would not be more than 500 ft apart.

Meters

An adequate provision of meters will not only enable water consumption to be measured but will facilitate its control and will probably lead to economies which will amply repay the cost of the meters. The cost of the water supplied to a process may be a very small part in the total cost of processing; but the actual cost of the water may be substantially more than it should be and yet, being small, attract no attention. Nevertheless, close study of the water distribution and consumption may bring to light inefficiencies in operation which, being remedied, have the effect of yielding a return for which no further expenditures of cash or effort are required.

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IP JOURNALS WANTED

A member of the IP is desirous of obtaining copies of the following issues of the *Journal* in order to complete his set :

No. 1	June 1914	**No. 19**	April 1919
15	April 1918	**24**	October 1920
16	June 1918	**25**	January 1921

Any member wishing to dispose of any of the above should communicate with the editor.

SCOTLAND'S CONSUMPTION OF PETROLEUM PRODUCTS

There was an increase of 96,307 tons of petroleum products for deliveries into inland consumption in Scotland during the first six months of 1956 compared with the same period of 1955, according to figures published by the Petroleum Information Bureau on behalf of the U.K. Petroleum Industry Advisory Committee.

Of this increase, the largest rises were aviation fuels (26,855 tons), industrial spirits, including industrial benzole (3456 tons), and fuel oil (42,945 tons).

Full details are given in the following table.

Product	*Jan./Dec.*	*January/June*	
	1955	1955	1956
Aviation fuels	133,001	66,626	93,481
Motor spirit (incl. motor benzole)	512,126	242,391	246,324
Industrial spirits (incl. industrial benzole)	12,974	5,824	9,280
White spirit	11,645	5,790	5,886
Kerosine:			
Burning oil	53,350	29,019	30,904
Vaporizing oil ...	81,312	48,614	35,896
Total kerosine ...	134,662	77,633	66,800
Derv fuel	185,959	89,889	99,458
Gas, diesel, and fuel oils:			
Gas/diesel oil ...	217,617	114,127	123,194
Fuel oil	357,234	179,980	222,965
Refinery consumption	181,444	90,908	91,915
Total gas, diesel, and fuel oils	756,295	385,015	438,074
Lubricating oils and greases	71,425	34,392	36,382
Paraffin wax and scale	3,122	1,679	1,500
Petroleum gases ...	4,655	2,243	2,212
Bitumen	156,383	73,038	78,781
Other products ...	62,755	47,890	50,539
TOTAL ALL PRODUCTS	2,045,002	1,032,410	1,128,717

NOTE.—Deliveries for bunkers for ships engaged in the foreign trade are not included. Figures refer to *inland consumption* only.

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MIDDLE EAST PRODUCTION

	September	*Jan./Sept.*
	Tons	
Iraq Petroleum Co Ltd	2,145,576	18,502,787
Basrah Petroleum Co Ltd	760,198	6,422,623
Mosul Petroleum Co Ltd	108,930	959,924
Iraanse Aardolie Exploratie en Productie Mij	2,297,000	19,102,000
Qatar Petroleum Co Ltd	471,033	4,454,216
Kuwait Oil Co Ltd	4,555,229	43,357,842

The refinery throughput at Abadan of the Iraanse Aardolie Raffinage Mij for September was 953,000 tons, the total for January to September being 7,735,000 tons.

Around the Branches

BAHRAIN, FAWLEY, KUWAIT, LONDON, NORTHERN, SCOTTISH, SOUTH-EASTERN, SOUTH WALES, STANLOW, TRINIDAD

Bahrain Branch

"Road Building in Bahrain" was the subject of a paper presented by David Shannon, M. Inst. C. E., manager of Holloway Bros. in Manama, at the September meeting of the Branch.

Mr Shannon described the whole project from the time when his company's tender to reconstruct 20 miles of road was accepted.

Construction was to start following completion of the Muharraq Airport runway, on which the firm were engaged, but work actually started on the road during July 1955.

The building of a typical section of the road consisted of three main operations. First, the preparation of a stable base; secondly, the laying on this base of a layer of hot-mix asphalt; and thirdly, the forming of 4-feet wide haunches each side of the asphalt to provide a safety margin for traffic.

Although the new road followed essentially the course of the old one, dips, high points, blind curves, etc. were removed and super-elevation provided at curves.

Mr Shannon stated that the type of road specified was new to Holloways and, as with any pioneering venture, problems were encountered.

The target for the contractors was 3000 feet of road per week. This target was not always met due to such difficulties as:—

(a) Training the labour to work to precise levels.
(b) Difficulty in building a suitable by-pass road in the Wiggly Bridge-Ali bus shelter stretch, owing to the poor binding properties of the wind-blown sand located in this section.
(c) Concrete-like nature of the old oiled road in the burial mound stretch, which resulted in numerous bent and broken scarifier teeth.
(d) Variable quality of the powdery chalk material located between Rifa'a and Awali, which necessitated repeated levelling, watering, and rolling.

Explanations for the various delays in the course of construction helped soothe those members of the audience who had suffered broken springs, shock absorber troubles, etc., caused by the worst of the pot-holes in the by-pass roads.

Mr Shannon showed two films of the road building operation and equipment used.

J. Taylor, of the Limmer Trinidad Asphalt Co., then gave a brief description of the asphalt hot-mix plant located on the Manama-Refinery road and also of the part played by Limmer Trinidad in the road-building work.

A Correction

We regret that, by an oversight, the photograph on page 295 of our November issue was wrongly attributed to the Kuwait Branch. It should have referred to the Bahrein Branch. The speaker, J. M. Dougary, is a member of the Kuwait Branch.

South Wales Branch

The 1956-57 session of the South Wales Branch was opened on 4 October, when H. E. F. Pracy (this year's branch lecturer of the Institute of Petroleum) presented a paper on "The Place of the Chemical Engineer in the Petroleum Refining Industry".

Mr Pracy gave as an introduction to his subject a résumé of his experiences when he first joined the petroleum industry. At that time, chemical engineering was almost unknown and the chemical engineer was recognized as an industrial chemist. From this starting point he stressed the gradual growth of chemical engineering in industry in general and in the petroleum industry in particular.

Mr Pracy next discussed the relative significance of mechanical engineering, chemical engineering, and chemistry and emphasized that all three were complementary in nature. He insisted that personal effort and ability stood for far more in a man's career than a mere label. The young chemical engineer should welcome the opportunity of learning to carry out all the elementary jobs connected with plant operation. He should recognize that much of his early employment would be as a shift supervisor and that, after carrying out these duties for some time, he would later become an assistant plant manager and, finally, a plant manager. Training of this kind accompanied, where possible, by a period in the maintenance engineering department would enable the chemical engineer in time to design plants and processes that could be easily operated and easily maintained. Mr Pracy felt, however, that chemical engineering design was only one side of the chemical engineer's activity. In addition, the chemical engineer, by his very background of training and education, fitted the requirements of process supervision, of research and development work, and was well equipped to lead an economic study group.

In regard to the rôle of the chemical engineer in management, Mr Pracy offered the opinion that management was an administrative function and as such could be carried out equally well by men qualified in other branches of the industry. In this, it was all important that the choice should rest with the right man. If that man happened to be a chemical engineer so much the better.

A lively discussion followed Mr Pracy's paper and the meeting concluded with a vote of thanks, proposed by Dr L. S. Thornes.

South-Eastern Branch

A special meeting of the South-Eastern Branch was held on 15 October to hear a paper on "The Practical Application of Bitumen in the Oil Industry" by

Mr Wheedon of Berry Wiggins & Co Ltd. Mr Wheedon obviously had a wide grasp of his subject and, with admirable lucidity, covered a multitude of uses of bitumen and its derivatives, from structural steel work and curtain walls to lagging and tank foundations. A number of display panels and photographs was on view.

The very enjoyable evening closed with the showing of the film "We found a Valley", dealing with the construction of the oil refinery at Aden.

Dinner Dance

This year's social function of the South-Eastern Branch was of a different character to its previous events of this nature. For the first time, it was a combined dinner and dance and took place at the Tudor House, Bearsted, near Maidstone on 19 October. Around the tastefully decorated dance hall tables had been laid and

(Above) *Miss B. Morgan, A. Chatting, Mrs Chatting, Miss D. Chatting, and Mr and Mrs H. C. Carter.*

Mrs Beswick, C. C. Glenday, Mrs Napier-Clavering, W. Bentley, W. R. Beswick, Mrs T. Davison and (right) *Mrs Glenday, N. C. Fraser, Mrs Bentley, F. D. Napier-Clavering.*

(Below) *At the Chairman's table: Mrs Rooke, C. S. Cleverly, Mrs Carruthers, C. E. Rooke, Mrs Todd, Mr Townsend, Mrs Cleverly, Dr J. E. Carruthers, Mrs Townsend, J. Todd.*

A. Genrey, Miss Knowles, Mrs Grey, D. K. Fraser, C. Hopwood, Mrs Harker, Mrs Gardner, Mr Blunt, Mr Gardner.

The Deputy Chairman's Table: Mrs Grey, Mr Rolfe, Mrs Rigden, Mr Darley, Mrs Darley, H. W. Rigden, Mrs Rolfe, N. W. Grey.

The Branch Committee were well represented by H. C. Carter, Dr J. E. Carruthers (chairman), N. W. Grey (deputy chairman), F. W. Martin, L. J. Challis (hon treasurer), A. Chatting, J. Moore (hon secretary), and D. K. Fraser.

Photographs by G. SELL

John Moore, the hon secretary, very pleased with the function, is here with Mrs Moore and Mrs Nicholls.

G. Fairbanks, Mrs Barker, Mr Walton, Mrs Walton, Mrs Fairbanks, Mrs Dugan and J. Dugan.

an excellent meal was served to members and their friends, numbering over 200. A noteworthy feature was the absence of any speeches, except for a short one from Dr J. E. Carruthers, chairman of the Branch, who at the conclusion of the dance expressed the hope that everyone had had an enjoyable time and that they would all come again next year.

Dancing continued from about the third course of dinner until 1 a.m. and there is no doubt that a good time was had by all. Those responsible for the event must feel that their efforts were well worth while. During the evening there were several spot dances and prizes were presented to the winners by Mrs Carruthers. The winners were H. W. Rigden and partner, G. Fairbanks and Mrs Dugan, F. W. Martin and Mrs A. Chatting, Mr and Mrs Genrey, Mr Harris and partner, and J. Moore and Mrs A. Chatting.

Kuwait Branch

At its 13th Ordinary General Meeting, held on 25 July and 1 August, the Branch was addressed by Dr John Murray, O.B.E., F.Inst.Pet., the author of a recent series of articles in the *IP Review*.

Dr Murray reviewed the economic background of the Middle East in general and of Iraq in particular, and showed how the oil industry had affected the economy of that country. Overall, the revenues obtained had ensured that the current budget could be balanced and Iraq was now in a favourable balance of payments position. Moreover, besides providing adequate internal fuel supplies, and stimulating commerce by extensive local purchase, the oil industry provided the revenue for large-scale development projects.

These projects were planned by a Development Board which received 70 per cent of the revenue from oil, and made use of the services of British and American consultants in formulating its plans. Most of the actual work was, however, carried out by French and German as well as by British contractors.

The immediate projects were those concerned with water, of which Iraq had ample but often untimely supplies. In order to control floods, two major schemes were being implemented—a barrage at Ramadi, on the Euphrates, to direct surplus water into Lake Habbaniyah, and a similar scheme at Samarra on the Tigris for channelling water into the Wadi Tharthar. Other projects were planned to store the water coming down the tributaries of the Tigris during the spring so as to supplement the natural flow during the summer, providing, incidentally, energy for the generation of hydro-electric power. A dam at Dokhan, on the lesser Zab, was well advanced and another major project was a still larger dam, on the Divala. Further dams were envisaged, together with what will ultimately be a series of irrigation schemes.

The communications system of Iraq was seriously deficient for a developing country. The main line of communication of the country was on a north-south axis and was served by a railway system of varying gauges. The road system, however, ran from east to west; hence, a programme of railway development, road construction, and bridge building was of major importance for the economy.

Dr Murray concluded his talk by referring to the various industries now being developed, including a refinery at Durah and a bitumen plant at Qar'yarah. A plant might be constructed to process gas from the Kirkuk field, which would provide ammonium sulphate fertilizer for agricultural use. A beet sugar plant and cotton-spinning and weaving factories were rising at Mosul, and a cement plant was being built to provide the material for the Dokhan dam. As well as this industrial progress, education, health, housing, and other social services were being improved at a comparable rate. Thus, the outlook for Iraq was indeed a very bright one.

In a vote of thanks to the speaker, J. G. Considine, said that the two evenings had been among the most interesting ever held by the Branch.

Northern Branch

At a meeting on 16 October, G. H. Thornley, a past-Chairman of the Branch and a member of Council, presented a paper on "Additives for Lubricants".

Mr Thornley recalled that a Symposium sponsored by the IP had been held in Manchester in the spring of this year, and on that account he had taken pains to avoid repeating what had been said on that occasion. In the event, Mr Thornley's remarks ranged over the whole subject of additive testing: the methods employed for determining additive response on a particular lubrication duty, the results obtained, the difficulties of correlation between the several tests for one duty, and the repeatability of a given test.

Comment, evidence, and conclusion followed each other speedily and efficiently and at the conclusion of the talk it appeared that nothing further could be said upon the subject. However, an interesting discussion followed and the meeting closed with a vote of thanks proposed by J. C. Wood-Mallock and endorsed with enthusiasm.

Scottish Branch

At a meeting of the Branch on 4 October 1956, W. Wright, an officer of H.M. Customs and Excise, presented a paper of which the following is a summary:—

The Customs and the Excise were separate departments until their amalgamation in 1910. Of the two, the Customs is much the older. There is evidence of Customs duties in Britain as early as the Heptarchy (established by the Anglo-Saxons in the sixth century). There was an organized Customs service in England in the time of Edward I, and not long afterwards, Customs duties were enforced in Scotland. In those days, the Customs were very much the King's Customs; a payment to the monarch by merchants arriving or departing with goods in return for a safe passage.

Excise duties were first imposed by the Long Parliament in England, in 1643, to finance the Civil War against Charles I. The duties were to be for the duration of the war only. They were put on a permanent basis after the Restoration of Charles II and have continued ever since.

The Customs and Excise is controlled by a Board of five permanent civil servants in London, assisted by a headquarters staff which includes professional and technical experts on all Revenue matters. For local administration, the United Kingdom is divided into 35 Collections, each headed by a Collector. There are 26 in England, two in Wales, six in Scotland, and one in Northern Ireland. Each Collector is directly responsible to the Board in London for the management of all Customs and Excise business in his area.

The chief function of Customs and Excise is the revenue taxation of all goods chargeable with duty, including Purchase Tax. They have also many non-revenue functions. The first hydrocarbon oil duty was imposed in 1909. It was levied on imported motor spirit and on motor spirit produced from imported or indigenous hydrocarbon oils. This duty was repealed in 1920 and replaced by excise licences on the vehicles, because the exemptions and rebates had made it unwieldy.

Imported hydrocarbon oils again became dutiable in 1928, the rate being 4d per gallon. The duty was progressively increased to the present figure of 2s 6d per gallon. Indigenous oils became liable to duty in 1950. They enjoyed a preference of 9d per gallon until October 1953, when their advantage over imported oil was increased to 1s 3d per gallon.

There is provision for the refund of duty on hydrocarbon oils used in industry, provided the final product is a non-hydrocarbon oil. This helps the chemical industry. Duty may also be refunded on the exportation of goods containing or made from hydrocarbon oils. Hydrocarbon oil may be exported or shipped as stores, duty free, from bond.

The Customs and Excise makes use of the oil industry's own system of accounts for control purposes. This is the general practice and is one of the reasons why the costs of collection are so low. In 1939, there was a total staff of 15,000 and the costs of collection amounted to 4¼d in the £1, for a total yield of £340 million. In 1955, the total staff was still 15,000 but the costs of collection were 1¾d in the £1, despite the introduction of many new forms of taxation, *e.g.* Purchase Tax, and much additional work of a non-revenue character, such as the import and export licensing and exchange control. Last year, the total yield exceeded £2000 million.

In 1939, the yield of hydrocarbon oil duty was £58 million; in 1955 this figure rose to £305 million.

Babcock House, the new head office for Babcock and Wilcox Ltd, which was formally opened by Sir Kenneth Hague (managing director) on 8 October. Situated over the Euston Square Underground Station, London, it will house some 1500 of the Company's employees.

Notes of the Month

Fire Prevention Prize

The Royal Society of Arts has awarded a Fothergill prize of £10 to S. Harrison, chief fire officer of the Kuwait Oil Co Ltd, for his proposal entitled "The use of the Cox Submarine Bolt-driving Gun in relation to the Base Injection of Air into Oil Storage Tanks for Controlling and Extinguishing Fires".

New French Exploration Area

A new oil exploration licence, covering 618 square kilometres in the lower Rhone Valley, has been granted to the Société des Pétroles de Valence, in which the BP Group has a 50 per cent interest.

The Company already holds two licences for areas farther north in the Valence Basin, where a deep test well is being drilled at St. Lattier.

New Polyethylene Plant

A plant for the production of polyethylene, according to the low-pressure process of Phillips Petroleum Company, is to be constructed at Grangemouth by British Hydrocarbon Chemicals Ltd, which is owned jointly by BP and The Distillers Co Ltd. The production capacity of the new plant is expected to be in the region of 11,000 tons a year.

Assam Tests

Preparations are being made by the Assam Oil Company to drill a second test well at Moran, in the tea area between Sibsagar and Lakhimpur. The rig which drilled the Moran No. 1 well will be used for that purpose.

The Company announces that well No. 1 has been drilled to a depth of 13,739 feet, and although it has given signs of oil, it is too early yet to evaluate their importance.

Assam Oil Reserves

"Proved and probable reserves in the Nahorkatiya area of Assam are sufficient to plan a production target of 2½ million tons per year plus about 45 million cu.ft. of gas per day, equal to about 600,000 tons per year", said W. B. Metre, senior geologist of the Assam Oil Company. He was delivering his presidential address to the Geological, Mining, and Metallurgical Society of India, and also said that on present evidence Assam could be expected to meet 56 per cent of present estimated crude oil needs. These estimates exclude the proved but unestimated reserves in parts of the Hugrijan area near Naoholia and the expected oil-bearing area at Moran.

Marine Survey off U.K. Coast

The first water-borne geophysical survey to be carried out by BP off the coast of Britain took place during mid-October. It was conducted near Swanage and Lulworth Cove from the 1000-ton corvette *Seislim*, the first British-owned vessel to be converted and specially equipped for this work.

The object of the survey was to investigate the nature of the rocks, down to a depth approaching 10,000 feet, beneath the sea bed. The results of the survey are at present being analysed at BP's London office.

Seeking Deeper Oil Source

Up to the end of 1955, after ten years of operation, the Formby oilfield, in Lancashire, has produced 9222 tons of oil. At the present time, about 10 tons of good quality oil a month are still being pumped from eight wells. In a further attempt to ascertain the primary reservoir which is believed to feed this small shallow oilfield, the British Petroleum Company is drilling a deep test well near Upholland. The Upholland well is now reported to be at a depth of about 1400 feet. This latest drilling follows four other wells (one as deep as 7680 feet) which have been drilled for the same purpose at various times.

Island Base in Persian Gulf

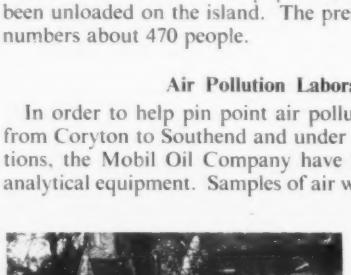
The small island of Das, in the Persian Gulf, is being prepared for use as a base camp for the drilling of an underwater deep test well by Abu Dhabi Marine Areas Ltd. BP has a two-thirds shareholding in this company, and the Compagnie Française des Pétroles one-third.

Following several years of intensive geological and geophysical surveying of the seabed off Abu Dhabi, the new well will be drillled some 20 miles off the island.

Work is now going ahead on Das in building a breakwater and laying foundations for workshops and stores, as well as erecting accommodation for about 200 employees. So far, more than 5000 tons of equipment, stores, and plant have been unloaded on the island. The present construction force numbers about 470 people.

Air Pollution Laboratory

In order to help pin point air pollution, over a wide area from Coryton to Southend and under various climatic conditions, the Mobil Oil Company have fitted a light van with analytical equipment. Samples of air will be taken and passed through a meter and then through a series of chemical scrubbers. These will retain pollutant gases which can be analysed and the quantity estimated.



It is intended that when a fully authenticated complaint is received, the mobile laboratory will be sent to the spot to enable an immediate investigation to be made. The data which will be obtained will be made freely available to all those who are technically qualified to interpret them.

The Company state that this is a further step in their policy not only to fight the nuisance caused by air pollution, but also to take active steps to ensure that any such pollution does not emanate from Coryton refinery.

Lubricating Oils on Display

A striking display of lubricating oils was arranged recently in the main entrance hall of Britannic House, London. This coincided with the British Petroleum Company's annual lubrication conference, which was attended by delegates from associated companies in Europe and as far afield as New Zealand.

Remote Control Loading Device

A remote control device, operated from a tanker moored at the end of submarine cargo loading lines 3½ miles out at sea, has recently been installed at the Lutong Refinery, in Sarawak, where the shallowness of the water prevents tankers from mooring close to the shore.

As a tanker approaches the moorings a portable transmitter is taken aboard. In addition to providing a radio-telephone service with the shore terminal. this portable set can transmit on a special "pump control" channel.

Should it be necessary to stop the pumps in an emergency, the pressing of a control button on the operating panel of the portable set overrides the telephone channel and brings the pump control panel into operation. On reaching the shore pumphouse the signal is fed to the particular engines pumping to the tanker on which the button was pressed. Solenoid-operated control valves then come into operation and stop the engines.

The equipment was developed jointly by Shell and the G.E.C.

Nigerians Train in the U.K.

Three more employees of the Shell-BP Petroleum Development Company of Nigeria Ltd, bringing the total number to nine, have recently arrived in the U.K. for advanced training.

They are Simon Osuji, Raphael Obioha, and Paul Emerenini.

Osuji and Obioha are training in telecommunications for three years. Practical work is being carried out with Standard Telephones and Cables, and theory at the Enfield Technical College, Middlesex. Emerenini is studying mechanical engineering at Loughborough College, in Leicestershire. The duration of his course is expected to be four years.

Nigerian Oil Search Continues

Further progress is reported in Eastern Nigeria, where BP and the Royal Dutch Shell Group are associated in exploration activities. The second well drilled at Oloibiri has, like the first, encountered oil, but the total thickness of the oil-bearing sands is not yet known, as testing has not been completed. A third well, about ¾ of a mile north-east of Oloibiri, was started in October.

Shell-BP Petroleum Development Company of Nigeria plan to drill another four or five appraisal wells, at or near Oloibiri, in order to ascertain whether oil is available in commercial quantities.

Drilling has also begun on two more exploration wells, bringing the total to 15 since the first deep well was spudded-in five years ago.

At Afam, 25 miles east of Port Harcourt, the Shell-BP Petroleum Development Co of Nigeria is employing a National 80 rig on a new well. In order to carry the drilling equipment to the location, 14 miles of road were constructed through difficult low-lying terrain.

The second well has been started further north, to the east of the River Niger, on the Akukwa structure, near Awka, Onitsha Province, and is the second to be drilled in that particular vicinity. Work will go on for four months, and it is hoped that the new well will determine whether any oil is associated with the high-pressure gas encountered in the Akukwa No. 1 well last year. Then, the pressure of gas was so high that it damaged the drilling equipment, and it was a fortnight before the well could be brought under control. Now a new and heavier drilling outfit capable of reaching a depth of 12,000 ft, is being used.

To get the equipment to the site, Shell-BP engineers reinforced five major bridges and numerous smaller ones, while a temporary Bailey bridge, with an 80-ft span, was laid over the Mama River.

Shell-BP state that since the first surveys were commenced 18 years ago, £14 million has been spent in the search for oil in Nigeria.

60,000-ton Tankers for BP

A BP photograph

British Industry *moving down the slipway into the Clyde.*

The BP Tanker Company is to include ships of 60,000 dw tons in its next building programme. Announcing this recently, at the launching ceremony of the 32,000 dead-weight ton *British Industry*, B. R. Jackson, chairman of BP, said that such large sizes mean building and docking problems but the Company's shipbuilding and ship-repairing friends could be relied on to meet and solve such problems.

The BP Tanker Company's fleet at present totals 144 ships, totalling 2,018,000 dw tons, in service (the largest being 32,000 dw tons) and it has 41 ships building and on order, including seven of 42,000 tons.

The Wimpey Central Laboratory

Over twenty-five years ago, George Wimpey & Co Ltd established a laboratory for research into, and development of, road surfacing materials. In the meantime the activities of the Company have spread into all fields of building and civil engineering. Consequently, the Central Laboratory has been extended to cover this wide field of activities and includes sections on soil mechanics, concrete, building, asphalt and tar macadam, metallurgy, mechanical development, structural, and library and information. It serves independent consultants and authorities as well as the Wimpey organization.

The activities of the Laboratory are described and illustrated in "Wimpey Central Laboratory", a well-produced volume obtainable on request from the Public Relations Office, George Wimpey & Co Ltd, Hammersmith Grove, London, W.6.

The Financing of Tanker Construction

F. J. Stephens

Speaking at the launch on 31 October of the s.t.s. *Zaphon*, a new 38,000 dw ton Shell tanker, F. J. Stephens, a managing director of The Shell Petroleum Co. Ltd., made a plea for the support of finance houses in the U.K. for tanker building, in which respect, he said, such institutions in Great Britain lag behind those of other countries.

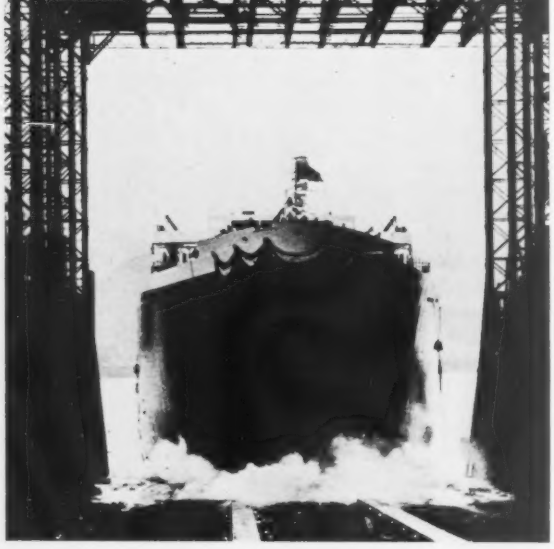
He said: "Money, always a most important commodity, is becoming a vital issue in the matter of transportation, and the shipment of oil to-day is one of its most important forms.

"The development of our foreign trade in general has been due to a large extent to the willingness of our financiers and our financial institutions to explore new possibilities of investment and expansion, and the need of this spirit of broad-minded enterprise is just as important to-day as it was in the days of our ancestors. It is estimated that tankers already ordered outside North America for delivery during the next four or five years will require about £300 million per annum, and this expenditure must increase as consumption of oil continues to rise. Now it can be assumed that as these ships have already been ordered, the money has been found or earmarked for them, but this is in a sense only the beginning, and what we must be mostly concerned with is the financing of further tanker building programmes, that is to say, for construction after 1960 or 1961.

"As an international oil group, we *own* a substantial proportion of the ships required in our business, and one might ask why we, the oil companies, should not be able to produce enough money to build all the ships which will be required to take care of future expansion within the industry. I have mentioned that new tankers for the years to come will cost in the neighbourhood of £300 million each year, but there is another figure, infinitely bigger. It is expected that the oil industry outside the United States will in the next five years have to spend £3500 million for crude production, refineries, distributing facilities, and so on, and this money must mostly be found from the industry's own generation of funds. For our shipping, therefore, we must rely on chartering for a large part of our requirements, and we are naturally anxious to encourage British owners, particularly bearing in mind the receding power of the British Merchant Navy which I have mentioned earlier.

The s.t.s. Zaphon *enters the Tyne, after the naming and launching ceremony which was performed by Mrs Harold Watkinson, wife of the Rt Hon Harold Watkinson, M.P., Minister of Transport and Civil Aviation.*

A Shell photograph



"The association between ship owners and charterers can take many forms, and is always susceptible to new ideas, but we feel that several forms of charter party with a mortgage on the vessel constitute a very adequate security, and in other countries the lending of large sums by the institutional investors on the strength of such charters is a widely accepted and expanding business; in fact in America and on the Continent it is often the bankers that spear-head this form of financing. This country is, I am sorry to say, very much behind in this respect, and it does look as though it is going to be a very uphill struggle on the part of owners to obtain the necessary financing in Britain. For this I detect two main reasons, firstly, the long forward commitments involved to the lenders due to a shortage of building berths, secondly, and much less understandably, a strange feeling that tankers are "speculative". In other words, that tanker mortgage backed by a charter party with an established oil company does not give the same degree of security as do "bricks and mortar", or loans to local Government authorities for housing, schools, and swimming pools".

He concluded by saying that it was difficult to see how the present level of tanker construction in the U.K. could be maintained without the positive interest of institutional investors and that it would be of significant consequence to British economy if it became necessary to rely to an even greater extent on the ships of other nations, because our financing mechanism was inadequate for the task of financing those of our own.

Opening of BP's New Engine Test Laboratory

Speaking at the opening on 2 November of the new Motor Fuels Engine Test Laboratory at the Sunbury-on-Thames Research Station of the British Petroleum Co Ltd, the Rt Hon Aubrey Jones, M.P., Minister of Fuel and Power, said that the oil industry must be given an assured future and that this had been the pre-occupation of the Government in recent months. He continued:

"For in recent months a twofold threat has developed to the passage through which 50 per cent of our oil supplies reach this country—the Suez Canal—an immediate threat to our right to use it and a longer term threat to its development in accordance with the needs of both Western Europe and of the Middle East. To avert that threat has been the Government's long-term objective throughout these months and indeed the action which the Government has now taken also counters the immediate threat to the Canal. If this objective is achieved—and we must achieve it—then any temporary closing of the Canal is, I suggest, but a small price to pay.

"As for the closing—how temporary it may be no one can, of course, say. But good government always does require a measure of precaution. And it was as a precautionary measure—against all possible eventualities—that the Government thought it right to take power to control the distribution of oil, should that become necessary. For the last three months we have naturally made provision against a possible closing of the Canal and I should like to thank the oil industry most warmly for the co-operation it has shown and is now showing in preparing for this contingency. Whatever the challenge I am sure that the resourcefulness and flexibility of the oil industry will enable us to meet it with confidence. In return we in the Government shall do everything within our capacity to discharge our responsibility towards you. It is in pledge of that that I am happy to be here to-day and to declare open this new motor fuel testing laboratory."

Previously the Minister had referred to some of the accomplishments of the oil industry since the research station was first founded, and said that the cars of 1917 used a fuel with an octane rating of 50, whereas present day cars required an octane rating of 75 or over. In 1917 the family car did perhaps 20 miles to the gallon, to-day the figure was nearer 30 for the same size of engine. This represented an advance in fuel efficiency of 50 per cent in 40 years and if a similar progress in the use of coal could be brought about, he said he would be a happy Minister of Fuel.

A BP photograph

A BP photograph

The Rt Hon Aubrey Jones, M.P., speaking prior to the opening of the motor fuels engine test laboratory. Also in the group shown here are (left to right): *J. M. Pattinson* (*managing director, BP*), *C. E. Spearing* (*general manager, BP Refineries Dept.*), *W. M. Catchpole* (*chief research chemist, BP*), *and* (on extreme right): *B. R. Jackson* (*chairman, BP*).

Regarding prices he said: "Do you realize that if it were not for governments—I am thinking of the petrol tax—standard grade petrol would cost less now than the very much simpler products of 40 years ago. Think of it—petrol cheaper than in 1917. Do you wonder that as Minister of Fuel and Power I am green with envy."

Expanding Research

In asking the Minister to open the new engine test laboratory, B. R. Jackson, chairman of the British Petroleum Co Ltd, said that the laboratory was a major item in the expansion programme of the company's research activities. The need for research was appreciated by the company as long ago as 1915, when it was first decided to create the nucleus of a research organization. In 1917 the research premises were acquired in the cellars of a house at Sunbury, where a small staff of chemists set to work. To-day, those small beginnings have expanded into an organization covering some 19 acres and employing some 900 people. That expansion was a good measure of the importance of research. At Sunbury they were concerned with both fundamental and applied research and ideas worked out at the bench were

The Rt Hon Aubrey Jones, J. G. Withers (*manager, Engine Research Section*), *and B. R. Jackson watching an engine check in the Test Laboratory workshop.*

tested in pilot plants to solve process and engineering problems which would be encountered in commercial operation.

Among the most important of the new buildings recently completed at Sunbury was the Motor Fuels Engine Test laboratory which was primarily concerned with testing fuels for motor vehicles. The programme of expansion also includes a new Analytical and Physics Laboratory, a workshop, a new restaurant and other buildings, and the total cost of this expansion together with further facilities now being planned would approximate £3 million. When completed the research station staff would be about 1400.

Concluding, Mr Jackson said that research, in which the company would play its part as one of the major units of the world oil industry, would help to ensure that the motor industry and all other consumers would have the fuels and other oil products required in increasing efficient operation.

Among those present at the opening ceremony was Dr F. B. Thole, who with Dr A. E. Dunstan opened the first research premises referred to by Mr Jackson. Dr Thole, at present a technical adviser to the Ministry of Fuel and Power, was the Company's chief research chemist from 1925 *to* 1935.

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OIL EMERGENCY COMMITTEES

Two oil industry committees have been formed in connexion with the Suez Canal dispute. These are (1) Oil Industry Emergency Committee and (2) Oil Emergency (London) Advisory Committee.

Oil Industry Emergency Committee

This committee has been formed at the request of the Government in order to assist the Ministry of Fuel and Power in dealing with the problems arising from the application of the measures to reduce the consumption of petroleum products in the U.K.

The chairman of the Committee is C. M. Vignoles (Shell-Mex and BP); the other members being as follows: Sir Leonard Sinclair (Esso Petroleum Co.), C. M. Merrick (Fina Petroleum Products), H. W. Rocke (Mobil Oil Co.), H. H. Bates (National Benzole Co.), R. W. Ball (Regent Oil Co.), G. C. Hick (representing other Companies), and H. E. Barry (Shell-Mex and BP) who has been appointed Secretary.

Oil Emergency (London) Advisory Committee

This Committee was set up some time ago in order to study and give advice on oil supply problems that might arise from the Suez Canal emergency. If required, it was also to assist governments in the implementation of any plans made to achieve the optimum of available supplies and tanker tonnage.

The headquarters are in London, and the members of the committee are as follows: B. R. Jackson (BP), J. H. Loudon (Royal Dutch/Shell), M. V. de Metz (Compagnie Française des Pétroles), and J. P. Berkin, Secretary, (Shell Petroleum Co).

The objective of the committee is to collect information from industry sources and assist governments or oil companies by providing information as to the developing supply situation. It will not have any operational functions.

As in the past, individual oil companies will be responsible for tackling the problems involved in providing Europe, including the U.K., with essential supplies of oil.

Personal Notes

R. E. Hales, C.B.E., accompanied by (left) *his wife, and* (right) *his daughter* (*Miss Rhoda Hales*) *leaving Buckingham Palace, after the investiture on* 23 *October.*

Robert E. James has been appointed export manager for Security Engineering Division, one of the Dresser Industries. He will be located in Dallas, Texas. Prior to joining Security in 1948 he was sales manager in London for the Oil Well Engineering Co Ltd and for National Supply Co. **A. G. Chandler** has been appointed eastern hemisphere export sales manager for Security and will be located in London.

B. H. J. Thom, A.F.Inst.Pet., has recently been appointed Oil Conservation Engineer for the Yukon and Northwest Territories in the Canadian Department of Northern Affairs and National Resources.

W. L. Beckett, formerly London area sales manager of The National Gas & Oil Engine Co Ltd, has been appointed London manager of the company and a director of its subsidiary, National Oil Engines (Export) Ltd.

W. M. Cumming, O.B.E., D.Sc., F.R.I.C., F.Inst.Pet. M.I.Chem.E., F.R.S.E., has retired from his post as technical director to The British Dyewood Co Ltd, and has set up as a technical consultant.

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SECOND CRUDE DISTILLATION UNIT AT SHELL HAVEN

A new 11,000 tons/day crude distillation unit, which will raise the capacity of Shell Haven refinery to 7¼ million tons per annum, is planned to come on stream by the end of 1958. Total cost of the new unit, with ancillary equipment, is estimated at £6½ million.

After passing through the furnace, one of the largest in the oil industry, which will have a heat absorption of over 200 million B.t.u/hr, the crude oil will enter the main tower which produces fuel oil directly as bottoms product. The new unit will also make, as a single stream, the special naphtha cut fed to the Platformer for production of high grade motor gasoline.

An Associated Ethyl photograph

SOMA Safety Conference

Oil Company Co-operation at Stanlow

Managers Sponsor Safety Discussions

Stanlow Oil Managers' Association

It often happens that a sudden external stimulus initiates, among a body of people, action which proves to be of permanent benefit and which continues long after the triggering cause has passed.

Such circumstances apply to the case of the Stanlow Oil Managers' Association (known locally as SOMA) which was founded in 1938, when the Munich crisis of that year caused the managers of the various oil refineries and installations located at Stanlow, Ellesmere Port, Cheshire, to set up an informal association with the object of organizing co-operation between the various installations in matters such as fire fighting and civil defence.

To-day, after nearly 250 meetings, SOMA is still fulfilling a valuable function in its rôle of an informal association of the managers of nine companies*, who normally meet at monthly intervals to consider topics of mutual non-conflicting interest such as safety matters, transport problems, housing difficulties, educational facilities, and the like. Questions such as labour relations and wage rates are however quite outside the scope of SOMA, which avoids the discussion of major items of oil company policy and confines its activities to non-controversial matters in which the close geographical proximity of the installations concerned renders mutual action of benefit.

In the development of such activities during the 18 years since the inception of SOMA, the need has become felt for a more specialized handling of certain problems than could conveniently be given in a monthly managers' meeting, and two permanent sub-committees of SOMA have been formed, to deal with safety and with transport.

*Associated Ethyl Co Ltd, Berry Wiggins & Co Ltd, Cabot Carbon Ltd, Cleveland Petroleum Co Ltd, Esso Petroleum Co Ltd, Lobitos Oilfields Ltd, National Benzole Co Ltd, "Shell" Refining & Marketing Co Ltd, and C. C. Wakefield & Co Ltd.

SOMA Safety Conference

The safety sub-committee, formed in 1953, has already done valuable work, especially in the field of co-ordinating fire-fighting facilities and in holding numerous fire drills, with the assistance of the county authorities. Despite however the importance, to oil installations, of fire prevention, there are numerous other safety matters which have to be borne in mind and brought home to personnel, and with the object of having a get-together on such topics, the safety sub-committee of SOMA organized a one-day Safety Conference which took place on 23 October 1956.

The Conference was held at the Stanlow works of the Associated Ethyl Co Ltd and was attended by 27 members, drawn from the staffs of the nine companies represented on SOMA.

Following a welcome from F. Smith (works manager, Associated Ethyl Co Ltd), the chair was taken by G. F. B. Clark ("Shell" Refining & Marketing Co Ltd, chairman SOMA safety sub-committee), who introduced J. S. Parker (refinery manager, Lobitos Oilfields Ltd and chairman of SOMA). Mr Parker opened the conference by outlining the history and purposes of the Association and then introduced the first speaker of the day, A. Mills, one of H.M. Inspectors of Factories, who spoke on "Some aspects of the Factories Act, with particular reference to the application of the Chemical Works Regulations to SOMA companies' activities".

Factories Acts and Regulations

Mr Mills pointed out that by far the greatest number (84 per cent) of industrial accidents happened in circumstances not controlled by legislation, and he stressed the value of close and friendly co-operation between the factory inspectors and the firms they visited; such co-operation was invariably extended by the great majority of undertakings. He explained the relationship between the Factories Act and the numerous regulations made thereunder and the problems, calling for new regulations, that could sometimes arise from decisions of the courts, as in a recent case concerning the guarding of grinding wheels.

The Act, and the various regulations, set only a minimum standard and most modern plants followed safety practices which were ahead of what was legally enforceable. Thus for example, although the conditions of tank entry were more stringently defined in the Chemical Works Regulations than in the Factories Act, most works followed the stricter procedure even when, as in the case of many petroleum installations, they did not come within the Chemical Works Regulations.

Although Mr Mills stressed that the factory inspector was more of an adviser than a policeman he drew attention to the provisions of s.119 of the Factories Act, 1937, which permits prosecution of an employee who deliberately disregards safety measures or misuses or omits to use safety equipment provided under the requirements of the Act.

Following Mr Mills' talk, the conference delegates divided into groups in which points arising out of the lecture they had just heard were discussed and subsequently reported back to the conference as a whole.

Respirators

The second main item of the morning was the showing of a film, *The Air we Breathe* (Mine Safety Appliance Co), which dealt with the development of industrial respirators, particularly those for use against dusts and fumes and with the principles on which such equipment functioned.

Safety Training

After the luncheon interval, during which the conference photograph was taken, the afternoon session opened with a talk on "Safety Training for Operators" by R. E. Dewhirst (U.K.A.E.A., Capenhurst).

The speaker pointed out that safety must be regarded as an aid to and not a brake on efficient production. Accidents were almost always due to the human element and to unsafe acts rather than to unsafe equipment. Safety training should have a positive approach and should stress "do's" rather than "don'ts". A proper example by supervisors was of the highest importance and there should be the greatest opposition to the often too prevalent view that a white coat could replace safety clothing and equipment.

Group discussion of Mr Dewhirst's paper followed, considerable attention being paid in such discussion to the manner in which a new employee could best be made safety-conscious. It was generally felt that he should be given a few days to find his feet before special safety training began.

Tank Entry

The last of the conference papers was on "Tank Entry" by R. R. Biggs (Associated Ethyl Co Ltd). Mr Biggs confined his remarks to the procedures to be adopted in the case of tanks which had contained leaded gasolines and his talk was accompanied by a display of the various types of equipment recommended for use in such circumstances. The hazard in leaded gasoline tanks was from the sludge, which contained organic lead compounds which could either enter the body through the skin, or else, as vapour, via the lungs. The latter was by far the greater danger and respirators of the fresh air type were essential. Pressure suits and air lines should preferably be made from PVC rather than rubber, as the former was much less permeable to toxic products. Even when sludge had been removed from tanks there still remained the hazard of lead compounds retained by scale and which could form a dangerous dust when such scale was chipped off. For an 8-hour day, the maximum permissible concentration of organic lead compounds in the atmosphere, expressed in terms of metallic lead, was 0·75 mg/10m^3. Constant skilled supervision of tank cleaning operations was thus necessary.

Mr Biggs concluded by making a plea for greater co-operation between tank constructors and the oil industry, so that tanks could be designed with enlarged access apertures and other means of facilitating cleaning, which in the case of many existing tanks was a more arduous task than it need be.

Conclusions from the Conference

Mr Biggs' paper was discussed by the Conference *en bloc*, after which a general summary of the work of the day was given by H. L. Sturgess ("Shell" Refining & Marketing Co Ltd). Mr Sturgess made the point that, valuable as a safety department was, the operating departments were the only ones which could get results in the field of safety as it was up to them to apply the advice and help they were given by the specialized safety staff. The possibility of enlarging trade union interest in the field of safety training should be explored and a constant and not spasmodic pressure had to be maintained on safety propaganda and training. Visual aids were of more value than lectures, "don't tell 'em, show 'em".

A vote of thanks to the Associated Ethyl Co Ltd, for the facilities they had extended (E. R. Harding of that company was largely responsible for the detailed planning of the Conference) and for their hospitality was proposed by G. W. Power (Lobitos Oilfields, Ltd, Hon. Sec. SOMA safety sub-committee) and the proceedings concluded with an expression of appreciation from the Conference chairman to the three lecturers.

Comments heard from the delegates during and after the Conference indicated that much value was attached to the lectures and particularly to the exchange of views which it had made possible, especially as all those attending had a close community of interest. It was hoped that the experiment of such a Conference would be repeated; possibly other centres of the petroleum industry would be interested in following the example set by the Stanlow area.

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Practical Solution to Clean Air Problem

A product, known as Oxycat, which is claimed to eliminate the obnoxious nature of industrial effluents of all kinds, is now available in the U.K. Invented by E. J. Houdry, it can also have an important heat-recovery or fuel conservation function. The Oxycat is marketed by Oxy-Catalyst Sales Ltd, Henley Park, Guildford, Surrey.

Photograph by Walter Bird

C. M. Vignoles, O.B.E.

Meeting the Energy Demand

Oil the Only Fuel

At a Conference in connexion with the Fuel and Power Exhibition organized by the Bristol Incorporated Chamber of Commerce and Shipping on 23 October, C. M. Vignoles, managing director, Shell-Mex and BP Ltd, said that oil was the only fuel which could be produced in sufficient quantity and fast enough to fulfil Britain's urgent energy demands.

"In the modern world, the clearest indications of a nation's industrial strength are given by the amount of energy applied in its industry", said Mr Vignoles. In comparing the U.S.A., Canada, and Sweden with Britain, he said that the U.S.A., which enjoys the highest living standards in the world, devotes some three times as much energy to industry as Britain; and Canada, with a population of little more than 15 million people, was already consuming more energy than the U.K. Moreover, in Sweden, the industrial worker was now operating more power than his British counterpart.

Mr Vignoles emphasized that the security of Britain's energy supplies for the future was a matter of supreme national importance; for if demand cannot be met, the consequences will be bitter. He also asserted that if the money can be found the oil will be there for the taking.

In regard to the undetermined amounts of oil known to exist outside the proven areas, Mr Vignoles said that current details suggested that these, and the large amounts still to be discovered in other potential oil-bearing areas, together amounted to about 115 million tons. One could therefore expect the ultimate recoverable quantities of oil still in the ground fully to meet the increasing needs of the world economy for many decades to come.

Finding the Capital Required

Mr Vignoles said that expert economist opinion suggested that world consumption would advance in the next ten years from 700 million tons a year to at least 1200 million tons. The oil industry expected that oil production would be more than 1600 million tons by 1975.

If energy requirements continued to expand at the present rate of 3 per cent annually, by the year 2000 the industry would have to provide nearly four times as much oil as at present.

"Finding the necessary money to finance this expansion is in itself a problem of the first magnitude. The grand total which the world oil industry will require over the next ten years is of the order of £40,000 million", said Mr Vignoles.

He then raised the question of where the money was to be found, and asserted that the greater part of it must, as in the past, come out of the industry's earnings. The long time lag between risk investment and returns had always made a high degree of self-financing desirable in this industry. But in any case, the world capital markets could not provide the necessary funds.

It was noteworthy that the new industrial capital issues in the U.S.A. last year, which comprised three-quarters of all issues in the free world, totalled £3000 million—and that, as had been seen, was just equal to the capital outlay necessary to-day to keep the oil industry doing its job.

Major Victims of Taxation

The pattern of things was shown by the fact that since the war only about £70 million of new sterling funds for the industry had been raised in the U.K. Yet in the last few years alone the sterling oil concerns had made capital outlays of about £1000 million.

A further example was the Royal Dutch/Shell profit for 1955 which amounted to £8 for every £100 turnover and £14 for every £100 of capital invested, of which four-fifths was retained in the business and only one-fifth distributed.

The capital expenditure of the BP group in the two years 1954 and 1955 was £98 million, and during 1955, in view of the anticipated requirements for future capital expenditure which must be financed mainly from profits ploughed back, there was retained in the business a sum of more than £50½ millions out of current earnings.

Mr Vignoles said that there seemed to be no other way in which this essential capital requirement can be met. "Essential", because without it the world—and Britain—would go short of the energy it needs.

In spite of this, oil products continued to be among the major victims of taxation all over the world. In 1955, for instance, the Royal Dutch/Shell group of companies paid £444 million in the form of sales tax, excise duties, and similar levies, and finally a further £116 million in taxation on profits and dividends. This latter figure had absorbed no less than 40 per cent of the final net income before taxation. "We can only hope that the governments of the world have all read the cautionary tale about the killing of the goose that laid the golden eggs," said Mr Vignoles.

Meeting the Home Demand

Finally, Mr Vignoles said that the U.K. was already the biggest oil market in Europe and the world's third biggest. Before the war, the U.K. was consuming less than 10 million tons of oil a year. Now it was consuming nearly 25 million tons—two-and-a-half times as much. Further, whereas before the war half the oil used in the U.K. consisted of petrol, the conversion in the last few years of more and more industrial plants from coal to oil had resulted in fuel oil being the largest item in the country's oil use to-day. In fact, Britain was now using twice as much fuel oil as in 1952, and he felt that the demand trends of the last five years were likely to persist.

The expansion envisaged for fuels which can be used directly to replace coal was from 7½ million tons in 1955 to 20½ million tons in 1960, an increase of 13 million tons in five years, or an average annual increase of nearly 20 per cent. The necessity for expansion on this scale was recognized by the Government, and measures had been put in hand to encourage it.

Finance was being made available, through the Minister of Fuel and Power, for the installation of fuel-saving equipment, including oil burning plant. This year's Finance Act extended the initial allowance for income tax purposes to similar equipment, including oil burning equipment.

The increase of two-thirds in Britain's total oil consumption expected by 1960 had called for new programmes for home refinery expansion by all the major companies. The latest projects provided for a further increase of 10 million tons in capacity within the next three years at a cost of more than £50 million.

FOURTH WORLD PETROLEUM CONGRESS

Receipts and Expenditure Account

Situation as at 31 December 1955

Receipts	*Lit.*	*Lit.*	Expenditure	*Lit.*
Subscriptions			General Secretariat and Milan Office	136,229,311
Oil companies	135,261,920		Publications and publicity	95,872,367
National donations	48,100,000		Public relations and receptions	29,826,641
Foreign donations	55,083,462		Rental of offices at E.U.R. office furniture and fittings	38,865,713
		238,445,382	Transportation	6,027,195
Membership fees		38,060,000	Sundry expenses	2,329,684
Sundry concessions	8,208,992		Excess of expenditure over receipts on excursions and hotel accommodations	1,591,547
Sums recovered	28,179,054			
		36,388,046	Total	310,742,458
Interest and various		2,578,541		
		315,471,969		

Estimated Receipts and Expenditure for 1956

To be provided by the Guarantee Fund	8,528,031	Sundry creditors	8,500,000
		Expenditure by the Liquidating Office	4,757,542
Grand total	*Lit.* 324,000,000	Grand total	*Lit.* 324,000 000

Obituary

WILLIAM HEATON RINEHART

Without a sense of humour, a love of company, and a gift for hospitality, an oilman, particularly if his lot be cast in remote spots, can be an unhappy man; but "Bill" Rinehart, whose death in Damascus on 2 October this year we regret to announce, had a sense of fun and geniality in abundance. In several Arab regions, particularly in Syria and in Jordan, he made hosts of friends—European, American, and Arab—and his jovial personality will long be remembered.

Born on 10 June 1888, in Pennsylvania, "Bill" had from his childhood an environment associated with oil. Altogether, he spenty forty years in oil well drilling. After leaving the United States, he served for five years with Attock Oil in the Punjab, and brought in that Company's first well at Khaur.

On 20 October 1938, he joined the Iraq Petroleum Company as toolpusher in Syria, and was based upon Deir ez Zor, in the north-eastern region of that country, where it was hoped that oil might be found. When, owing to the exigencies of war in the Middle East, drilling was suspended in Syria—that was in the summer of 1941—"Bill" was acting fields superintendent, and subsequently he helped on the pipeline as station engineer and on water wells.

After the war, in 1946, exploration restarted in Syria, and "Bill" occupied the position of fields superintendent until his retirement in March 1950.

The rest of his life was devoted to the interests of his Arab friends. He spent his remaining, all too few, years in drilling water wells in Syria and Jordan, mostly for Arab refugees.

This summer he was incapacitated by a stroke when at Kamechlie, helping the Menhall Company on their Karatchok drilling. Unfortunately, he never recovered.

To his widow, his daughter, and his grandchildren will be extended the condolences of many in the Middle East who experienced the warmth of his approach, his humanity, and his exemplification of the attitude that the best way to meet a sand-storm of troubles is with a laugh. A "character", in whom good nature predominated over the refinements of life, has left the Middle Eastern scene.

Books and Films

Shell Technical Publications

A useful list of technical papers published during 1955 by members of the N.V. de Bataafsche Petroleum Mij and by The Shell Petroleum Company Ltd and other Group companies is now available. In the BPM list are 96 entries and in the Shell list 46 entries, all of which are classified by subjects and indexed by authors' names.

Water Research

Primarily aimed as a means of contact between The Water Research Association and with the water undertakings who are its members, *Water Research News* appears to be of interest also to some of our readers. Thus, the first issue dated September 1956 contains an article on cathodic protection from the viewpoint of buried pipes and cables. An article on the permeability of polythene to coal gas is also included. The address of the Association is 18 Linkfield Lane, Redhill, Surrey.

Plastic Pipelines

A useful study of the pros and cons of plastic pipe is contained in *Pipelines to the Future* published by the Plastics Division of the Monsanto Chemical Company. Springfield, Massachusetts. In the first part, the fundamentals of plastic pipe are outlined and its mechanical and other properties are graphed and tabulated. Comparative installation prices are given.

In discussing the market for plastic pipe in the second part, information regarding fabrication and uses is given and production and marketing costs are detailed. Published as No. 3 of the Monsanto Business Executive Series, the price is $1·00.

DECHEMA Publications

Preparation of the *Achema Yearbook* 1956-8 is now in hand. As with previous issues it will help visitors as an introduction to the ACHEMA 1958, the exhibition covering European activity in the chemical industry. A 12-page brochure is available, free, from DECHEMA, Frankfurt am Main, W.7, Postfach.

Also available from DECHEMA is a 20-page brochure, giving details of the sixth issue of *Dechema-Werkstoff-Tabelle*. The latest section deals with the chemical resistance of construction materials to aggressive media "Chlorwasserstoff" to "Diglycolsäure", edited by H. Bretschneider and E. Rabald, this bringing the completed portion of the work up to 600 pages.

Instrumentation Appreciation Conference

In order to facilitate an increase in the use of instrumentation, the Association of British Chemical Manufacturers set up an Advisory Committee to give advice and help to members in connexion with their instrumentation problems.

As part of its activity, this Committee organized a Conference, held at Harrogate in April 1956, for the purpose of showing higher management the potentialities of instrumentation. During the Conference, a number of sessions were held in which prepared papers were presented and followed by discussions. Finally, an open discussion was held when written questions were dealt with by experts giving their considered views.

Three of the papers dealt with the economic advantages resulting from instrumentation in (a) a small-sized works, (b) a large-sized works, and (c) a new plant. Among wider applications papers were presented on "Instrumentation as an aid to Fuel Efficiency" and "Effluent Instrumentation".

The Proceedings of the Conference are now available in book form, price 12s 6d per copy, cash with order, from ABCM, Cecil Chambers, 86 Strand, London, W.C.2.

The Industry's Reference Work

Just published is the 47th edition (1956) of Walter E. Skinner's indispensable annual, the *Oil and Petroleum Year Book*. This year it is larger than ever, with 380 pages crammed with information pertinent to the petroleum industry, information not only for the industry but also for those who wish to know something about the industry. Details of nearly one thousand British and foreign companies are given with particulars of officials, operations, capital, and financial results. A Buyers' Guide has over 1000 entries and the list of managers and agents contains some 700 names and addresses.

Published by Walter E. Skinner, 20 Copthall Avenue, London, E.C.2, the price is 30s. (32s. post free). Early ordering is advisable as the book is quickly sold out.

World Fleet of Tankers

Points from a summary appearing in *Analysis of World Tank Ship Fleet, December* 31, 1955 indicate that the world fleet of ocean-going tank ships (2000 gross tons and over) increased from 2602 vessels on 31 December 1954 to 2681 vessels a year later. In the same period, the average deadweight tonnage per vessel of the world tanker fleet increased from 15,000 tons to 15,500 tons, but the average speed of the vessels increased only one-tenth of a knot to 14·0 knots.

On 31 December 1955, the U.S.A. possessed the largest tank ship fleet in the world, accounting for 20·8 per cent of the total carrying capacity. Other leading flags of registry on that date were: the U.K. with 16·9 per cent of the world's carrying capacity; Norway with 15·4 per cent; Liberia with 10·9 per cent; and Panama with 8·0 per cent.

U.S. owners continued the practice of placing tankers under the registry of a friendly power. At the end of 1955, 41·6 per cent of the carrying capacity of the U.S.-controlled tanker fleet was under foreign registry as compared with 37·8 per cent one year earlier and 33·6 per cent at the end of 1953.

The carrying capacity of "supertankers" of 24,000 dw tons and over amounted to 20·2 per cent of the December 1955 fleet as compared with 17·8 per cent one year earlier.

On 31 December 1955, 513 ships of approximately 13·6 million dw tons were under construction or known to be on order—an increase of 98 ships and about 4·2 million dw tons from construction activity of one year earlier.

The tank ships under construction or on order at the end of 1955 averaged 26,600 dw tons, 72 per cent more than the average of the existing fleet at that time.

Together, Norway and the U.K. accounted for 45 per cent of the total deadweight tonnage being constructed at the end of 1955, the leading nation being the U.K. with 137 ships, aggregating 3·5 million dw tons.

The remainder of this handsomely bound and useful volume is devoted to a detailed analysis and statistical tabulations of the world tank ship fleet. The book is published

by the Statistical Research Department, Sun Oil Company, Philadelphia, Pa.

Foothold in Antarctica

Over five weeks after sailing from London on 14 November 1955, a Canadian sealing vessel of 850 tons first encountered the ice of the Weddell Sea. During the month which followed, the small vessel's struggle with the pack-ice captured the imagination of the world. Breaking through at last, the *Theron* made landfall at the southern end of the Weddell Sea on the last day of January 1956. Here, Shackleton Base was established at 70°50′ South, as far south in the world as a ship can go. After eight days at Shackleton, the early approach of winter forced *Theron* to leave—without the "eight who stayed behind". She returned to London on 23 March 1956.

This magnificent feat has been recorded in the film *Foothold in Antarctica*, which was commissioned by The British Petroleum Company as part of their contribution to the expedition. The film, which is in Eastmancolour, lasts 20 minutes.

BP photographs

The Theron *breaks through the ice of the Weddell Sea, and* (below) *the "eight who stayed behind" to prepare a base camp.*

A BP photograph

B. R. Jackson (chairman of BP) greets Dr V. F. Fuchs (right), *leader of the Commonwealth Trans-Antarctic Expedition.*

Footnote.—The Commonwealth Trans-Antarctic Expedition, led by Dr Vivian Fuchs, aims to make the first crossing of the Antarctic Continent. This is a distance of over 2000 miles, more than half of which is unknown territory. The journey is to be made between the Weddell Sea and the Ross Sea, with the support of a New Zealand team led by Sir Edmund Hillary.

At Shackleton Base, the Expedition will find a camp, built by men from the m.v *Theron*—the "eight who stayed behind".

Two New Industrial Films

In December 1953, Mobil Oil Company set up a European Industrial Film Library for films made in the U.K., France, Germany, and Italy. Two of the Company's latest films, both of which were made by its continental associates, are as follows:—

(1) *Hydraulic Systems*, which was made mainly in France and adapted for the U.K., shows how energy is transmitted by means of fluids under pressure. The film begins with some simple demonstrations and then goes on to show how fluid power transmission is used on land and sea and in the air. The different kinds of pumps and valves which are necessary in hydraulic systems are illustrated and explained. Hydraulic oils are complex products and to function correctly must have special properties incorporated in them. These characteristics are explained and practical examples shown to demonstrate their importance.

(2) *Diesel Engine Lubrication*, which was made in Germany and adapted to U.K. practice, has been designed to interest all audience levels. It shows the cycle of operations in diesel engines; the principles of supercharging (by means of animated diagrammatic sequences); and the sequence of fuel injection. The film also shows what is involved in correct diesel lubrication and how the additive type oils are capable of providing improved lubrication. The subject of oil filtration is covered and various types of filters are shown.

Both these films are 16 mm. in monochrome, and run for 30 minutes. They can be borrowed from the Mobil Oil Co Ltd, Industrial Divisional Offices, Caxton House, Westminster, London, S.W.1.

SIXTY YEARS OF BRITISH MOTORING

To commemorate the 60th anniversary of the British motor industry, Shell-Mex and BP Ltd commissioned Sallon, the well-known caricaturist of the *Daily Mirror*, to prepare cartoons of many famous racing drivers, past and present. The result is a collection of 68 colour drawings of these famous men now published in one book presented by the Company to their guests on the occasion of the annual reception held in connexion with the London Motor Show. Arranged in alphabetical order, from George Abecassis to Mrs Wisdom, the drivers include Prince Birabongse, Kaye Don, Mike Hawthorn, Stirling Moss, Mrs Kay Petre, and Ken Wharton, to name but a few. "Motor-racing Drivers Past and Present" is a handsome tribute to those drivers who have done so much for British motoring.

Motor Racing Films

As is customary at the Motor Show reception in Shell-Mex House, films showing the skill and thrill of motor racing were exhibited. The first of these was concerned with the R.A.C. International Rally of Great Britain 1956, this being the first occasion on which the film had been shown anywhere in the world. This rally is indeed a test of skill and endurance and it was quite interesting to see how even experienced drivers could make mistakes in some of the final tests on Blackpool promenade.

The second film was the R.A.C. International T.T. race of 1955 which was the last occasion on which the Dundrod Circuit in Northern Ireland was used for such a meeting. It is also the last film record of the participation in motor racing of Mercedes-Benz, who have, temporarily at any rate, retired from the motor racing field. During this film the thrills of motor racing are very much to the fore, and the photography leaves nothing to be desired from the technique or coverage angles.

Both films were made for Shell-Mex and BP Ltd by Random Film Productions Ltd, and run for 11 and 25 minutes respectively. They are available on free loan to clubs and other organizations through the Shell-Mex and BP Film Library.

Esso Appointments

Consequent upon the large-scale expansion programme announced by Esso Petroleum Company earlier in the year, some change in organization has taken place and a number of new appointments have been made.

Development (Operations) Department

E. Evans-Jones, B.Sc., A.M.I.Mech.E., F.Inst.Pet., M.I.Chem.E., is to be manager of this new department established at Head Office. He joined the Company in 1936 as senior engineer and has successively served as head of Physical Marketing Operations and latterly as manager of the Operations Department. From 1939 to 1948 he was deputy chief operating officer of the Petroleum Board.

G. A. Vickers, A.F.Inst.Pet., now manager of Development Engineering, joined the Company in 1924 in the Technical Department. In 1932 he went to the Engineering Department and, after a period with the Petroleum Board, became its manager. He was responsible for the construction of various bunker terminals abroad.

R. L. Hill, B.Com., who is manager of Budget Control in the new Department, joined the Sales Research Statistics Department in 1949 and, after various appointments in the General Sales Department, became district manager, Sheffield, in 1955.

J. F. Biden, who joined the Agwi Petroleum Corporation in 1935 and rejoined in 1945 after war service, has been appointed manager of Distribution Planning. In 1948 he was transferred to London on the supply organization formed for the building of the Fawley refinery and from 1955 was engaged in co-ordinating supplies to affiliates in Europe, North Africa, and the Middle East.

Marketing Organization

A. T. Worcester, M.Inst.Pet., now manager of Costs and Operations, joined the Company in 1920 and, after occupying various positions, became operations manager of the South-Western Division in 1939. After service with the Petroleum Board he returned to that post and in 1950 became assistant manager of Costs and Operations Department and its manager in 1952.

D. T. Bourhill, who succeeds Mr Worcester as manager of Costs Department, first entered the Company's service in 1940. After war service he was made a circuit manager in 1951, district manager, Birmingham, in 1951, and costs and operations manager, Birmingham, in 1952. In 1955 he became costs control assistant in the Costs Department.

E. S. Scorgie, M.Inst. Pet., manager of the operations department, was seconded to the Petroleum Board in 1943 after service with the Company from 1938. In 1944 he became manager of the Pacific Wharf refinery, in 1948 engineer of the London Division, and in 1954 assistant operations manager.

A. C. McGechan, M.Eng., A.M.I.Mech.E., M.Inst.Pet., manager of Engineering (Operations) Department, became an assistant engineer to the Company in 1937, and in 1945 returned from war service as senior mechanical engineer. He became assistant manager, Engineering Department, in 1951.

National Trade Division

J. G. Benson, D.S.O., D.F.C., A.C.I.S., new manager of this division, joined the Accounting Division in 1931 and later spent some time in the Shipping Department. He returned from war service in 1945 and transferred to Intava Ltd in 1946. He became Esso's assistant aviation manager in 1949 and manager in 1952.

Aviation Department

D. C. Ward-Campbell, now manager of the Aviation Department, is of American birth and joined Esso in 1935. Returning from war service in 1945 he became aviation representative in London and subsequently held appointments in Head Office and in the Northern Division. He became assistant aviation manager in 1955.

Fawley Refinery

J. Bowen, J.P., formerly employee relations superintendent, becomes assistant refinery manager, and will be responsible for the Accounting, Employee Relations, Medical, and Public Relations Departments. Mr Bowen held a number of personnel management appointments before he joined the Agwi Petroleum Corporation in 1939.

R. H. Angibault, succeeds Mr Bowen as employee relations superintendent. He joined the International Association (Petroleum Industry) Ltd in 1936, and after war service joined Esso in 1946. Since 1950, he has held a number of positions at Fawley, connected with training and employee relations.

D. F. Jacques, B.Sc., Ph.D., A.F.Inst.Pet., formerly cost superintendent, has been appointed process superintendent. He joined the technical department of the refinery as a process engineer in 1951

J. E. M. Jeffers, B.Sc., who succeeds Dr Jacques as cost superintendent, joined the Company in 1947 as a technical assistant in the Process Department, and in 1951 he was appointed cracking and light ends superintendent. He then became a process supervisor (1955) and assistant process superintendent (1956).

Refinery Co-ordination Group

A. W. Forster, B.Sc., A.M.I.C.E., A.F.Inst.Pet., formerly assistant technical superintendent at Fawley refinery, has been appointed refining co-ordinator in the group recently established at Head Office under Dr A. W. Pearce, general manager of refining. After National Service, he joined the Company in 1951, in the technical department of the refinery. He was appointed successively supervisor, Chemicals and Cost Control Division; lube oil co-ordinator (Process Department); and supervisor, Technical Service Division.

Petroleum in Parliament

Fuel and Power Research

In a written reply on 29 October, the Minister of Fuel and Power said that the major research bodies engaged mainly on fuel research were as follows: Ministry of Fuel and Power; Department of Scientific and Industrial Research; National Coal Board; Central Electricity Authority; Gas Council; British Coal Utilization Research Association; British Coke Research Association; British Electrical and Allied Industries Research Association; and the Coal Tar Research Association. The research budgets for these institutions amounted to £3¼ million for the year 1955.

The Minister indicated that co-ordination between the work of the two Government Departments mentioned and of the three nationalized industries was secured through frequent consultation and through the examination of their research programmes by his Scientific Advisory Council, on which all of them were represented. The Government-supported research associations were autonomous bodies whose programmes were determined by their councils: these, however, contained representatives of the Government Departments and the nationalized industries concerned.

In regard to oil research, the Minister said that his Scientific Advisory Council included a distinguished oil scientist, and that from time to time he invited the major oil companies to furnish a qualitative statement of their research effort, where this did not vitally affect their competitive position.

Proposed New Refinery in the Solent

In the House of Lords on 25 October Lord Teynham referred to the proposed construction of a new oil refinery at Hook, on the Solent between Southampton and Portsmouth, and its serious defence implications. He said that Fawley would be a major target in the event of another war and that an atomic bomb in the Fawley area would destroy both refineries if they were so close together. He also said that another refinery in the area would increase congestion of shipping, would mean loss of horticultural land, would worsen pollution of the waters, and that yachting interests would suffer.

Lord Lucas of Chilworth said that the Esso Company had already spent £45 million at Fawley and that this represented a huge influx of dollars. A further £22 million was to be spent on extensions which would save an expenditure of $200 million a year. A plastics factory and a synthetic rubber plant were also to be built there. Investment in the new Caltex refinery would be between £35 million and £38 million; most coming from America in dollars, and he did not know that we could turn up our noses at such a great influx of dollars.

Lord Mancroft, under-Secretary, Home Office, said that planning permission had not yet been applied for, and that no decision would be taken without a public local inquiry. He could not give any indication of the Government's ultimate decision, but the fact that an industrial development certificate had been granted after consideration by the Government might reasonably be taken as indicating the inclination of the Government to grant permission for this project. However, the Government had not closed their minds on this matter.

Cut in U.K. Oil Consumption

On 7 November, the Minister of Fuel and Power said that in view of the situation in the Middle East, and its effect on oil supplies, the Government had decided, as a precautionary measure, to make an immediate reduction of 10 per cent in oil consumption. Given the co-operation of all consumers, he said that it should be possible to achieve a saving of this order without any elaborate rationing machinery and without seriously affecting the economy of the U.K. The oil companies were therefore being required to reduce deliveries to their customers forthwith to 90 per cent of what they would normally have supplied.

The 10 per cent cut on motor fuels—petrol and diesel oil for road vehicles—applied to all deliveries except to police, fire, hospital, and ambulances services and public transport, whose demands would be met, but who would be expected to make what economies they could. Supplies to garages were to be cut by 10 per cent, and the Minister said he was writing to all garages asking them to keep a small reserve at all times for doctors, home nurses, and midwives.

The Minister appealed to all motorists to moderate their demands wherever possible. To prevent hoarding he had made an Order prohibiting the sale of motor fuel otherwise than into the tank of a vehicle or for immediate use for other purposes.

He also announced a 10 per cent cut in the deliveries of fuel oil, gas oil, and diesel oil, and explained that this would affect supplies to industry and the use of these oils for heating. He asked all users of these fuels to consider immediately how they can reduce oil consumption. The Minister said the only exceptions to this cut would be agriculture, fishing, and essential coastal shipping, and buildings like hospitals, where special considerations arise; but he hoped that all these users also would make whatever economies they can. The gas and electricity industries were being asked to make bigger savings and reduce their requirements of oil to the maximum extent possible without affecting their production.

For the present the Minister said that the oil companies would continue normal deliveries of other petroleum products such as aviation fuels, vaporizing oil, lubricants, and paraffin, which make up only a small proportion of the country's total consumption of oil. But the Government asked all users of these oil products to exercise restraint.

Motor Fuel Rationing

On 20 November the Minister of Fuel and Power announced that from 17 December 1956, motor spirit and derv fuel would be rationed. He also announced that the cuts in the use of other fuels would be increased from various dates.

Oil Supplies

On 12 November a Joint Under-Secretary of State for Foreign Affairs said that the three pumping stations of the Iraq Petroleum Company's pipeline in Syria have been destroyed.

The Saudi Arabian Government have cut off supplies of crude oil to the Bahrain refinery and prohibited the loading of British and French tankers at Saudi ports.

He also said that as a result of the blocking of the Suez Canal by Egypt all tankers have been diverted round the Cape.

Trade Literature, etc.

Another £1 Million Contract

The second contract this year for more than £1 million has been placed with G. & J. Weir Ltd for sea-water evaporating plant. This will supply 896,000 gallons of fresh drinking water daily to the Netherlands Antilles island of Curaçao.

Amber Oils' "Operation Manual"

A profusely illustrated "Operation Manual", dealing with the use of cutting, drawing, and heat treatment oils, was published recently by Amber Oils Ltd. It contains much interesting information and practical guidance for engineering and machine shop executives. Copies may be obtained free on request to the Company at 11a Albemarle Street, London, W.1.

Unit Steam Trap

An entirely new design of inverted bucket steam trap has been added to the Lancaster range of steam traps. The sizes at present available are ½-inch (weighing 4 lb) and ¾ and 1 inch (weighing 7 lb each). The body is made of cast iron but all the internal fittings, with the exception of a copper float, are of stainless steel. The manufacturers claim that the three models will withstand pressures up to 200 psi. A descriptive brochure is obtainable from Lancaster & Tonge Ltd, Pendleton, Manchester.

£5½-Million NATO Contract

A £5½-million N.A.T.O. contract has been awarded by the Turkish Government to Williams Brothers Co of Oklahoma and Costain-John Brown Ltd of London for the construction of oil line pumping stations, marine terminals, tank farm facilities, and inter-connecting pipe lines. This forms part of the N.A.T.O. programme for Turkey.

The first teams of technicians will travel to Turkey early in October and work will commence at the end of this year.

New Equipment

PSC Applied Research Ltd have recently developed and built two new instruments:—(1) The R-Theta computer, a pilot-operated navigational device for jets, which, independently of ground transmissions, shows course to base or target at the lift of a switch. (2) An electronic ice-shedding gear which is claimed to have made the all-weather arctic fighter a practical proposition.

The airborne profile recorder, used in mapping, and the airborne radiation detector, for prospecting for radioactive ores, are two other products manufactured by the same company.

Mobil Industrial Technical Bulletins

Eleven bulletins published recently by the Mobil Oil Co Ltd are as follows:—No. 9—Mobil Rust and Corrosion Preventives. No. 10—The Mobil Etna Oils (Nos. 2, 3, and 6). No. 11—Mobil Oils for Textile Spindles. No. 12—The Mobil Etna Oils SS. No. 13—The Mobil Viscolite Oils. No. 14—Solvac. No. 15—Solvac Double One. No. 16—Solvac T. No. 17—Solvac 531. No. 18—Sultran. No. 19—Vacmul.

Copies are obtainable from the Company's Head Office, Caxton House, Westminster, S.W.1.

Iraqi Contract for Brush Group

The Brush Group Ltd has signed a contract with the Baghdad Electricity Services to install and have in operation by 15 May 1957 diesel electric generating equipment for a new "peak load" power station.

Two factories in the Group are concerned: Mirrlees, Bickerton, and Day Ltd, Stockport, who are supplying four Mirrlees KVSS-12 diesel engines, each developing 3022 b.h.p. (12-hour rating) at 428 rev/min, and the British Electrical Engineering Co Ltd, Loughborough, who are supplying four Brush alternators with a total output of 8000 kW, besides all the switchgear.

Aluminium Insulation

A new form of aluminium jacketing has been developed which is likely to find wide application in enclosing steam, hot water, chemical, and oil pipes. It is made of 0·006-inch aluminium foil fabricated with 3/16-inch corrugations to provide extra strength. Generally, the jacketing has a glue-on asphaltic moisture barrier comprised of Kraft Union waterproof paper. The material is supplied in rolls 24 inches wide by 100 ft long, and may be cut on the site to the required size with strong scissors. It is then easily secured to pipework by means of aluminium straps. Bends in pipework may be bandaged with the same material in 3-inch widths. Further details may be obtained from Venesta Ltd, Vintry House, Queen Street Place, London, E.C.4.

Hand-operated Tube Bender

A small hand-operated tube bending machine, known as the "Staffa", has recently been introduced by Chamberlain Industries Ltd.

The manufacturers claim that the machine is capable of bending light gauge ferrous and non-ferrous tubes of up to 1½ inch diameter and steam and gas tube up to ¾ inch nominal bore. This means that it is not necessary to purchase a range of benders for various classes of tube.

Tubing Spider and Slip Assembly

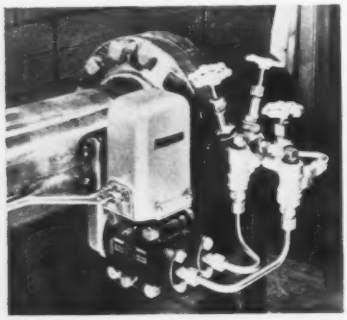
An illustrated brochure, No. 465, describing the National type "B" tubing spider and slip assembly, is available on application to the National Supply Co Ltd, Two Gateway Center, Pittsburgh, Pa. It is claimed that the two available sizes are capable of handling a wide range of tubing sizes with a minimum number of parts and expense.

Petroleum Plant

A profusely illustrated brochure *Plant Construction Services*, setting out the beginnings and development of Head Wrightson Processes Ltd, has been published recently. This firm has taken advantage of the rapid post-war expansion of the U.K. petroleum industry in order to develop distillation units, heat exchangers, caustic regenerators, sulphur dioxide extraction plant, cracked and reformed tops treaters, carbon black plant, tube stills, and pressure and storage vessels. Copies of the brochure may be obtained from the Company, Baltic Street, London, W.C.1.

Differential-pressure Cell Transmitter

A differential-pressure cell transmitter, type 13A, which embodies new features, has been introduced by Foxboro-Yoxall. Its function is to measure the differential pressure across an orifice or other restriction in a pipeline or between high and low taps on a closed vessel. The cell then converts the measurement obtained into proportional output air pressure, and transmits a pneumatic signal over a single air line to one or more remote receiving indicators, controllers, or recorders. Thus, either the rate of fluid flow in a pipeline or the liquid level in a closed vessel may be determined.



Details may be obtained from Foxboro-Yoxall Ltd, Lombard Road, Merton, London, S.W.19.

German Equipment Manufacturers

Titled *Die Bezugsquelle der Mineralölindustrie* and published by Maschinenbau-Verlag, Frankfurt/Main, this 137-page book gives most useful information on German manufacturers of petroleum equipment. A striking feature is that the classified list of products and manufacturers and the alphabetical index to that list are given in six languages—German, English, French, Italian, Spanish, and Portuguese. In many cases also the manufacturers' announcements are given in at least three languages.

New Lubricants for Calder Hall

Two companies have announced that they were asked to evolve new types of lubricant for part of the atomic power plant at Calder Hall.

The first, Shell, were asked to evolve a lubricant for the special plant manufactured by C. A. Parsons and Company. After subjecting many materials both to radiation in an atomic reactor and to the cobalt 60 source which was installed at the Shell Thornton Research Centre, the Company developed entirely new types of lubricant capable of withstanding very high temperatures and intense atomic radiation.

The other company, Rocol Ltd, was consulted about the sixty control mechanisms which enable the uranium rods to be moved in and out of the reactor. These controls have to be treated and remain lubricated for many years.

After testing all types of solid lubricant in carbon dioxide atmospheres of high pressure and temperatures, the Company finally evolved a varnish producing a molybdenum disulphide film, known as "Molytox". This was adopted and the control mechanisms are lubricated by dry treatment with this material.

Daura Refinery

An illustrated booklet, describing the Daura Refinery, has been published by the Kellogg International Corporation. The refinery, which is situated south of Baghdad, on the west bank of the Tigris, processes 24,000 b.d. of crude oil from the Kirkuk fields. Details are given of the plant and products, including gasoline, kerosine, fuel gas, light gas oil, diesel oil, and residual oil.

Copies of this informative booklet (printed in English, Hindi, and Arabic) may be obtained from the Corporation, on application to Kellogg House, 7/8 Chandos Street, London, W.1.

Forthcoming Meetings

THE INSTITUTE

(*At* 26 *Portland Place, London, W.*1, 5.30 *p.m.—tea* 5 *p.m.*)

Symposium on Staff Training. **2 January 1957**

IP FAWLEY BRANCH

(*At Esso* (*Fawley*) *Recreation Club, Holbury*, 7.30 *p.m.*)

Refinery Project Development. A. W. Forster, B.Sc., A.M.I.Chem.E., A.F.Inst.Pet. **11 January 1957**

IP LONDON BRANCH

(*At Shell-Mex House, Strand, London, W.C.*2, 6 *p.m.*)

Film Evening. **14 December 1956**

(*At location to be announced*)

Dinner Discussion. **23 January 1957**

IP NORTHERN BRANCH

(*At Engineer's Club, Albert Square, Manchester* 2, 6.45 *p.m.*)

Joint meeting with the Manchester Association of Engineers.

Smoke Abatement with Special Reference to the Contribution to be made by Petroleum. **25 January 1957**

IP SCOTTISH BRANCH

(*At BP Refinery, Recreation Hall, Grangemouth*)

Joint Meeting with the Stirlingshire & District Sections of R.I.C. & S.C.I.

Address by Dr McLean, British Hydrocarbon Chemicals Ltd. **18 December 1956**

(*At Lyceum Galleries, Edinburgh*, 7 *p.m.*)

Annual General Meeting. Talk on a Canadian Visit by Dr H. B. Nisbet. **24 January 1957**

IP SOUTH-EASTERN BRANCH

(*At King's Head Hotel, Rochester*, 7.30 *p.m.*)

Annual General Meeting.

Film Show. **8 January 1957**

IP SOUTH WALES BRANCH

(*At Training Centre, BP Refinery* (*Llandarcy*) *Ltd*, 5.30 *p.m.*)

Coal and Oil as Partners in Energy Supply. R. R. Gordon, M.A., Ph.D. **3 January 1957**

IP STANLOW BRANCH

(*At Grosvenor Hotel, Chester*, 7.30 *p.m.*)

Pollution Abatement in the Oil Industry. A. W. W. Kirby, B.A., B.Sc. **19 December 1956**

Annual General Meeting. 7.0 p.m.

Film Show. 7.30 p.m. **16 January 1957**

SITUATIONS VACANT

Air Ministry Works Designs Branch requires in London **Designer/Draughtsmen** for bulk petroleum storage and pumping installations experienced in one or more of the following:—
(*a*) Storage tank layout and design (*b*) pump house and plant layout (*c*) development of pipeline schemes (*d*) hydraulic calculations. Technical training to O.N.C. standard required. Salaries up to £790 p.a. Starting pay dependent on age, quals. and exp. Long-term possibilities with promotion and pensionable prospects. 5-day week. 3 weeks 3 days leave a year. Normally natural born British subjects. Write stating age, quals., employment details incl. type of work done, to any Employment Exchange quoting Order No. Borough 1005.

An Instrument Engineer is required by the Central Engineering Department of Albright & Wilson Limited, Chemical manufacturers.

The Department is responsible for the design, erection and commissioning of new plant in the U.K. In common with the rest of the Chemical Industry a high degree of instrumentation has been achieved by the Company, and all new plant is highly instrumented.

He would be responsible to the Chief Instrument Engineer for the solution of instrument problems associated with new plant, and also for modification to existing plant.

A degree or equivalent qualification in mechanical or electrical engineering is desirable. Preference will be given to candidates with a wide experience rather than highly specialized knowledge of one branch of instrumentation.

The Company has a non-contributory life and superannuation scheme, and house purchase facilities are available.

Applications should be addressed to the Staff Officer, Ref. 334, Albright & Wilson Ltd., P.O. Box 3, Oldbury, Birmingham, stating briefly, age, qualifications and experience.

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UNIVERSITY OF BIRMINGHAM

Applications are invited for the post of **Grade II Lecturer** in Petroleum Production Engineering from honours graduates in Engineering with practical experience. Range of salary £650-£1,350 with efficiency bar at £900.

Candidates will have an opportunity to carry out research in some field appropriate to petroleum production, preferably reservoir engineering for which adequate facilities are available.

Applications should be sent by 1st January, 1957, at the latest, to the Registrar, the University, Birmingham, 15, from whom further particulars may be obtained.

The University, G. L. BARNES, Secretary.
Birmingham, 15.
November 1956.

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UNIVERSITY OF BIRMINGHAM

A summer course on "Oilfield Reservoir Engineering" will be held in the University of Birmingham during 1-26 July 1957. The course, which will be residential, will comprise lectures by members of the Petroleum Production Department of the University and specialist lectures from industry, including, in particular, the British Petroleum Company Limited. Further information can be obtained from H. Gilmour, Petroleum Production Department, University, Edgbaston, Birmingham, 15.

October 1956 G. L. BARNES, Secretary.

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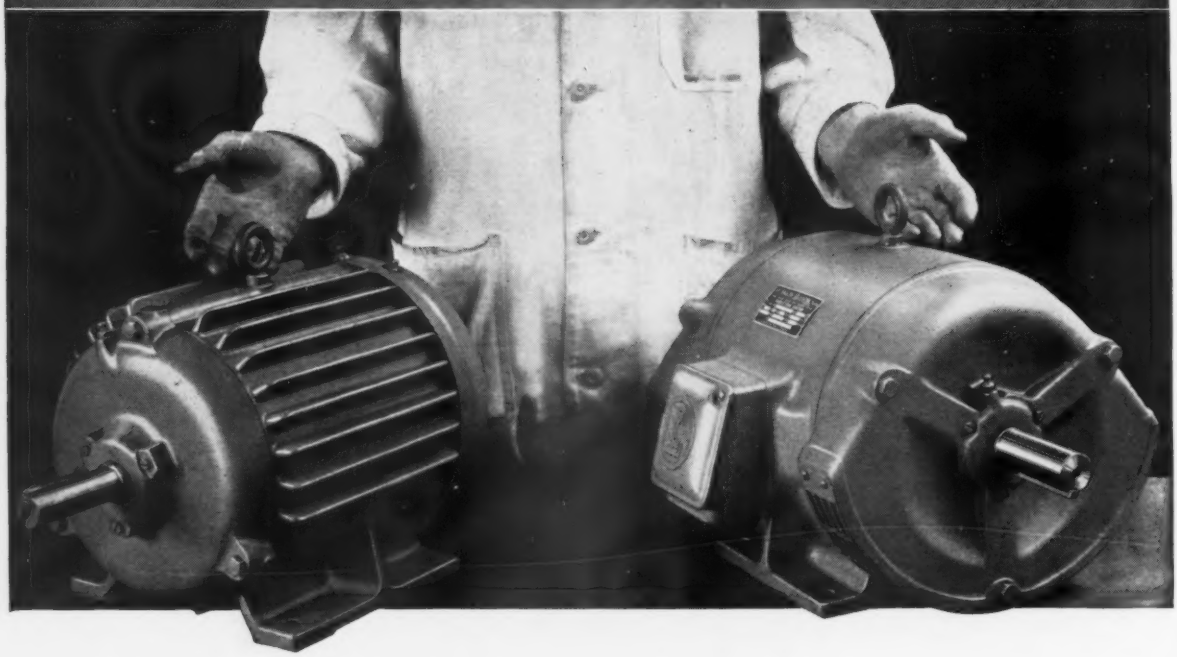

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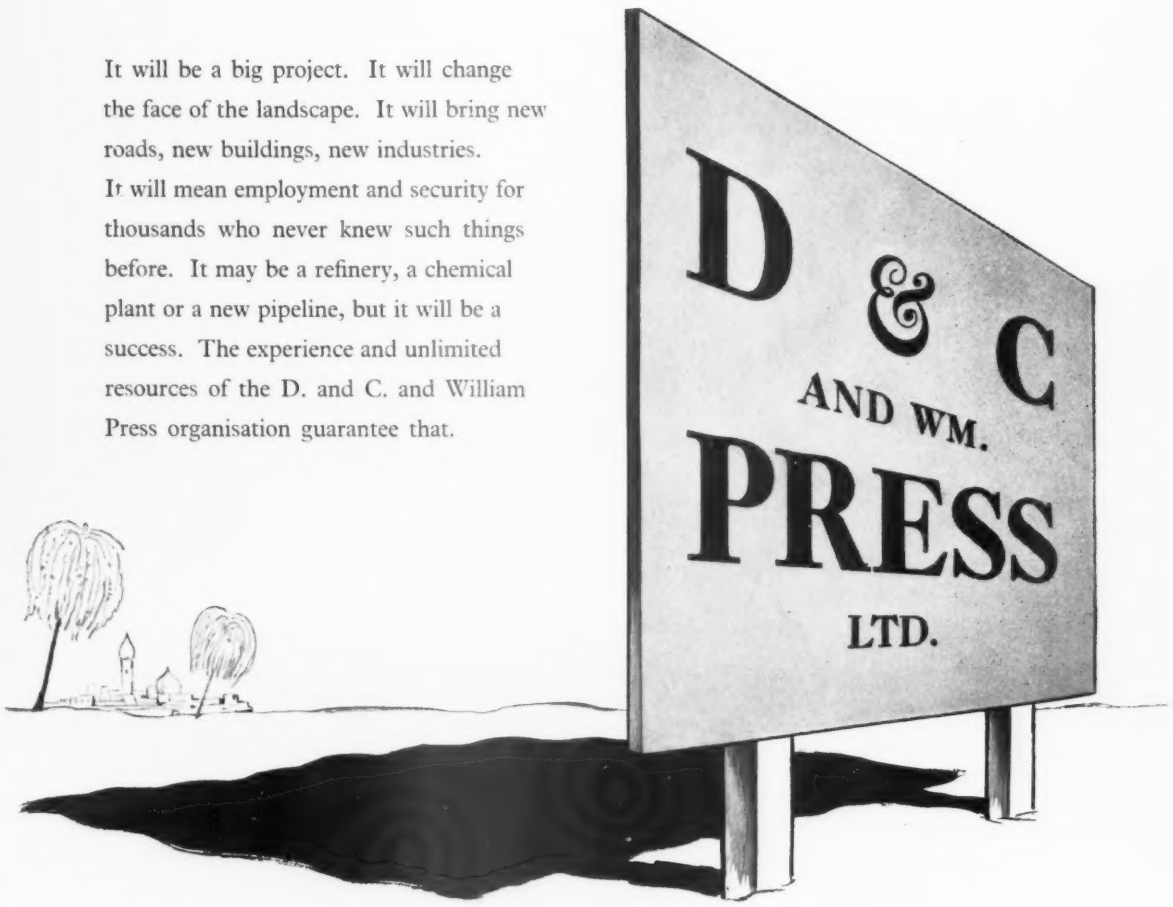

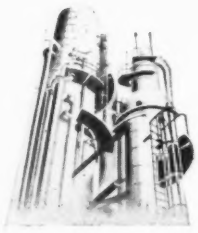

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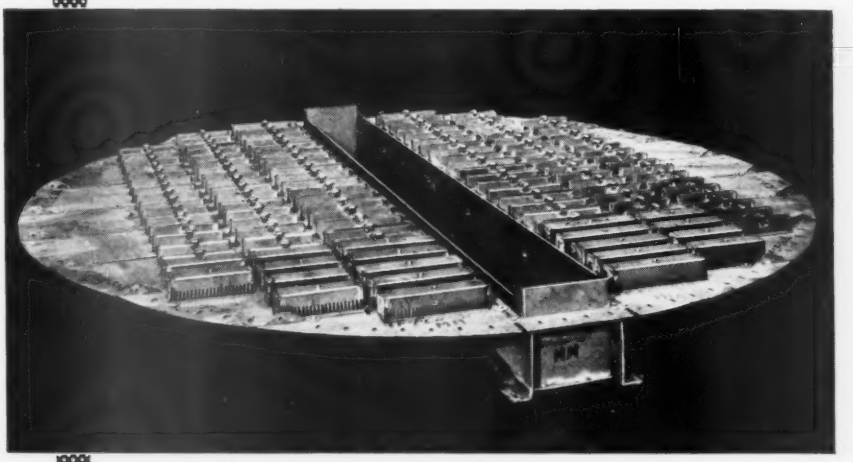

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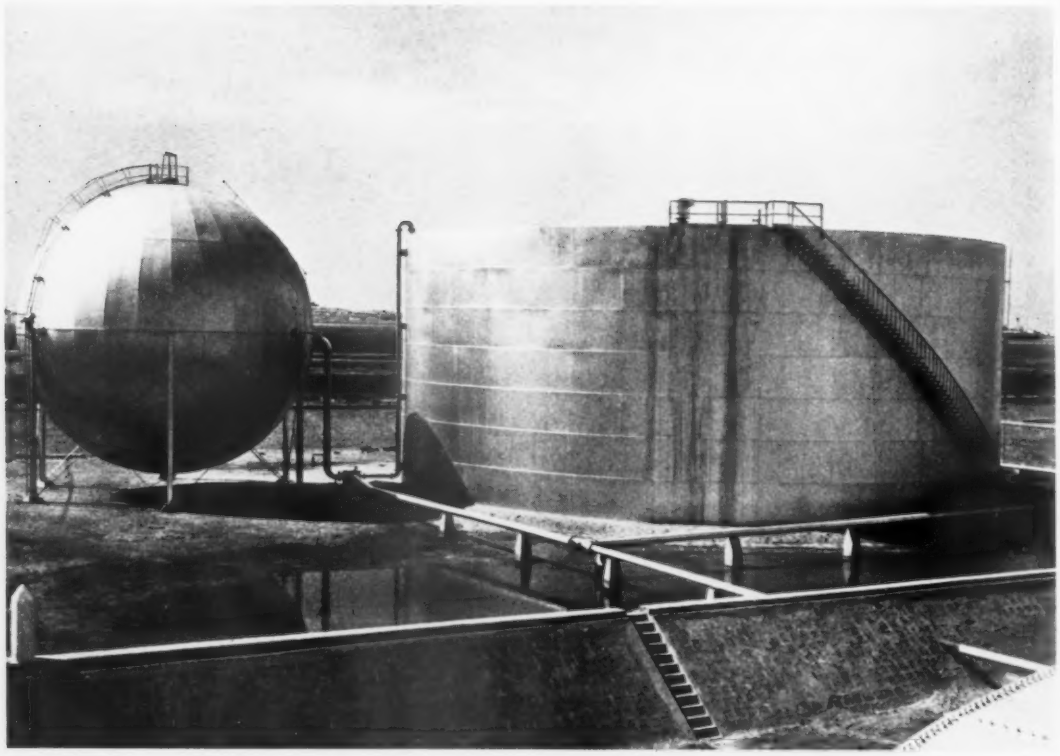

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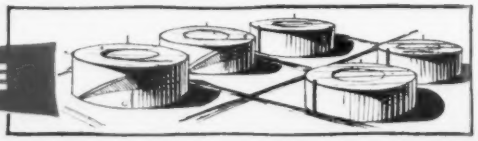
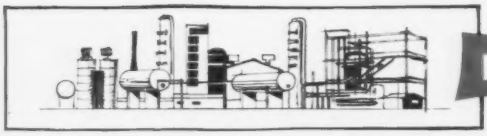


OIL STORAGE



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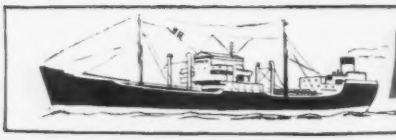

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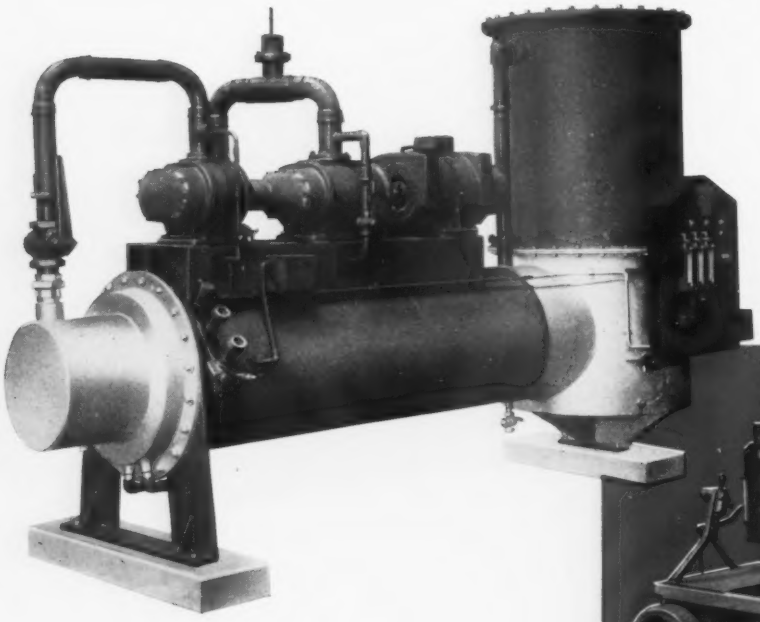

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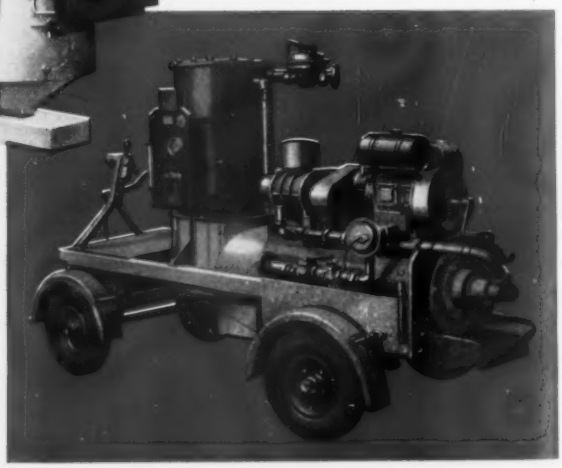

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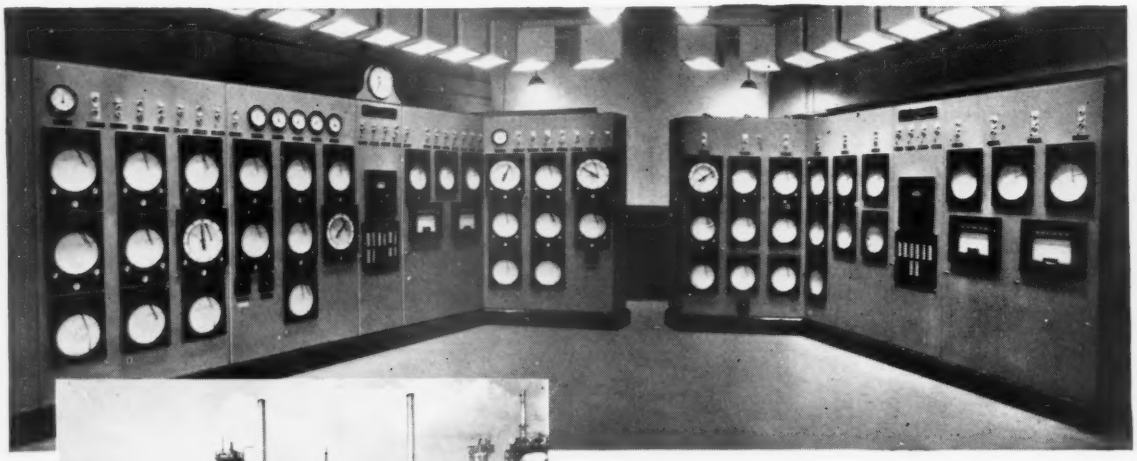

Honeywell Pneumatic Receivers in a control room at the Esso Petroleum Company's Refinery at Fawley, Southampton. The instruments are recording and controlling the stabilising and fractionating of naphtha from the atmospheric pipestills. These processes render the naphtha as suitable feedstock for conversion to high octane petrol. Instrument panels installed by Foster Wheeler Ltd.

The naphtha stabilising equipment of the atmospheric pipestills.

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For complete information about Honeywell Pneumatic Receivers, write for Specification Sheet No. 285 to Honeywell-Brown Limited, 1 Wadsworth Road, Perivale, Greenford, Middlesex. Sales Offices located in the principal cities of Britain, Europe and throughout the world.

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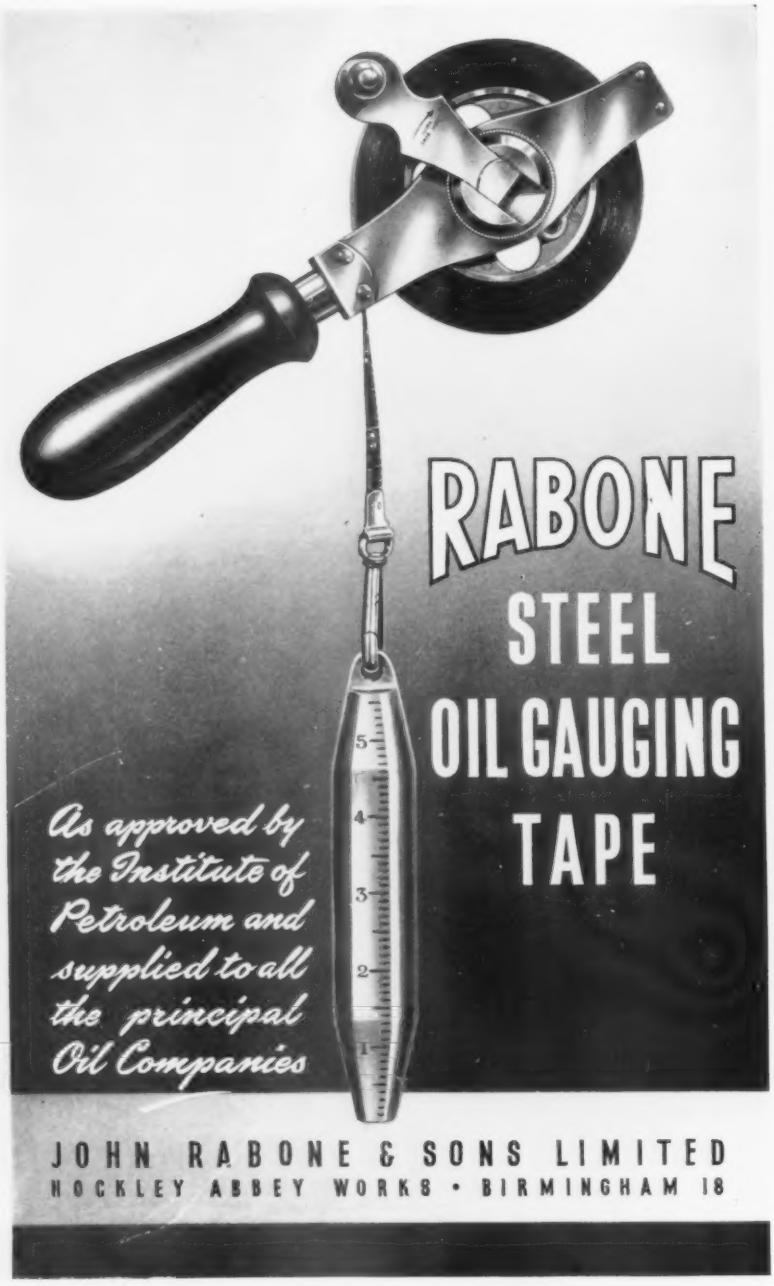
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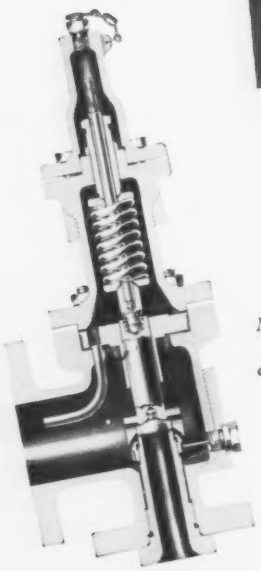

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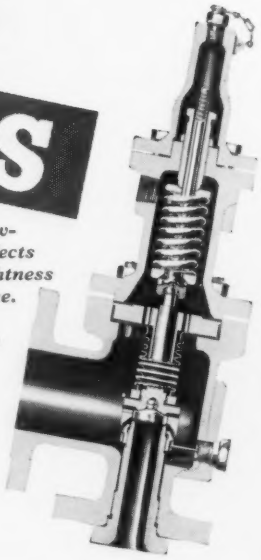

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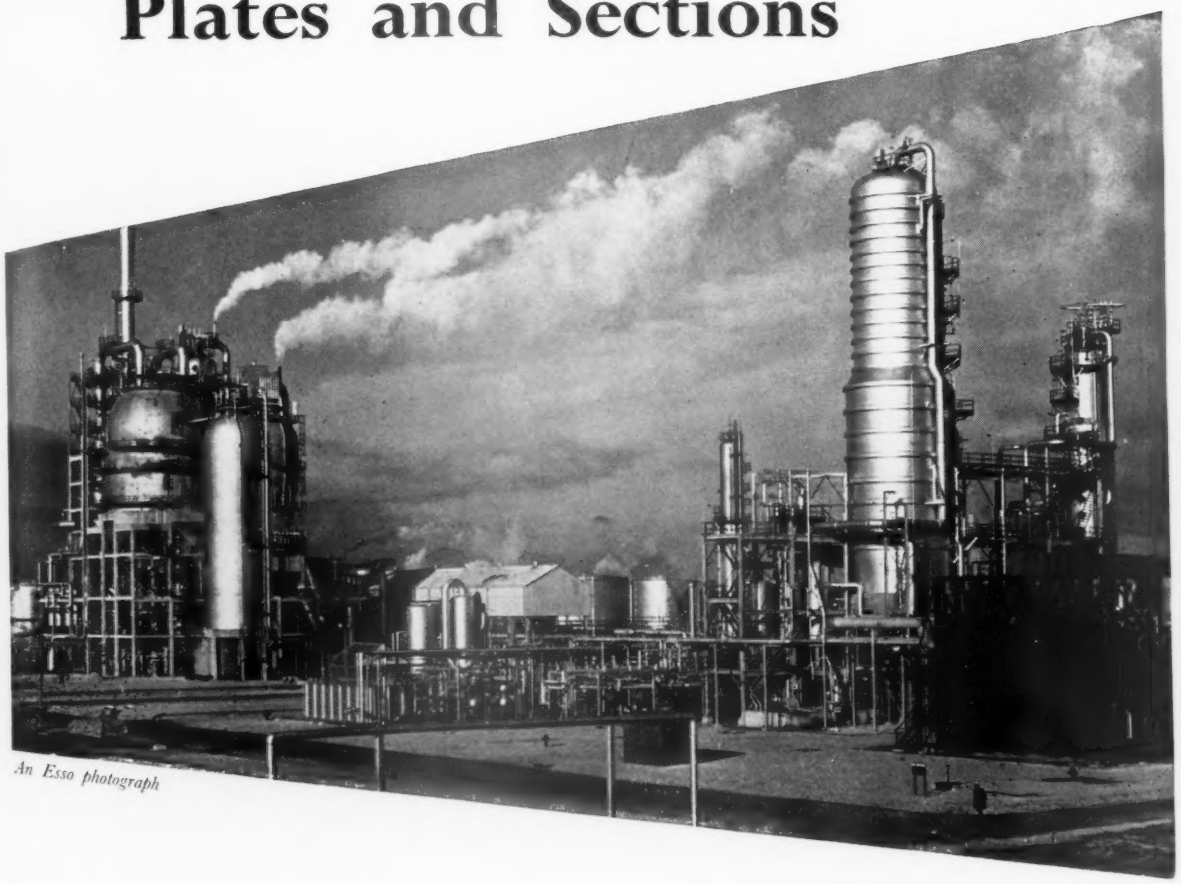

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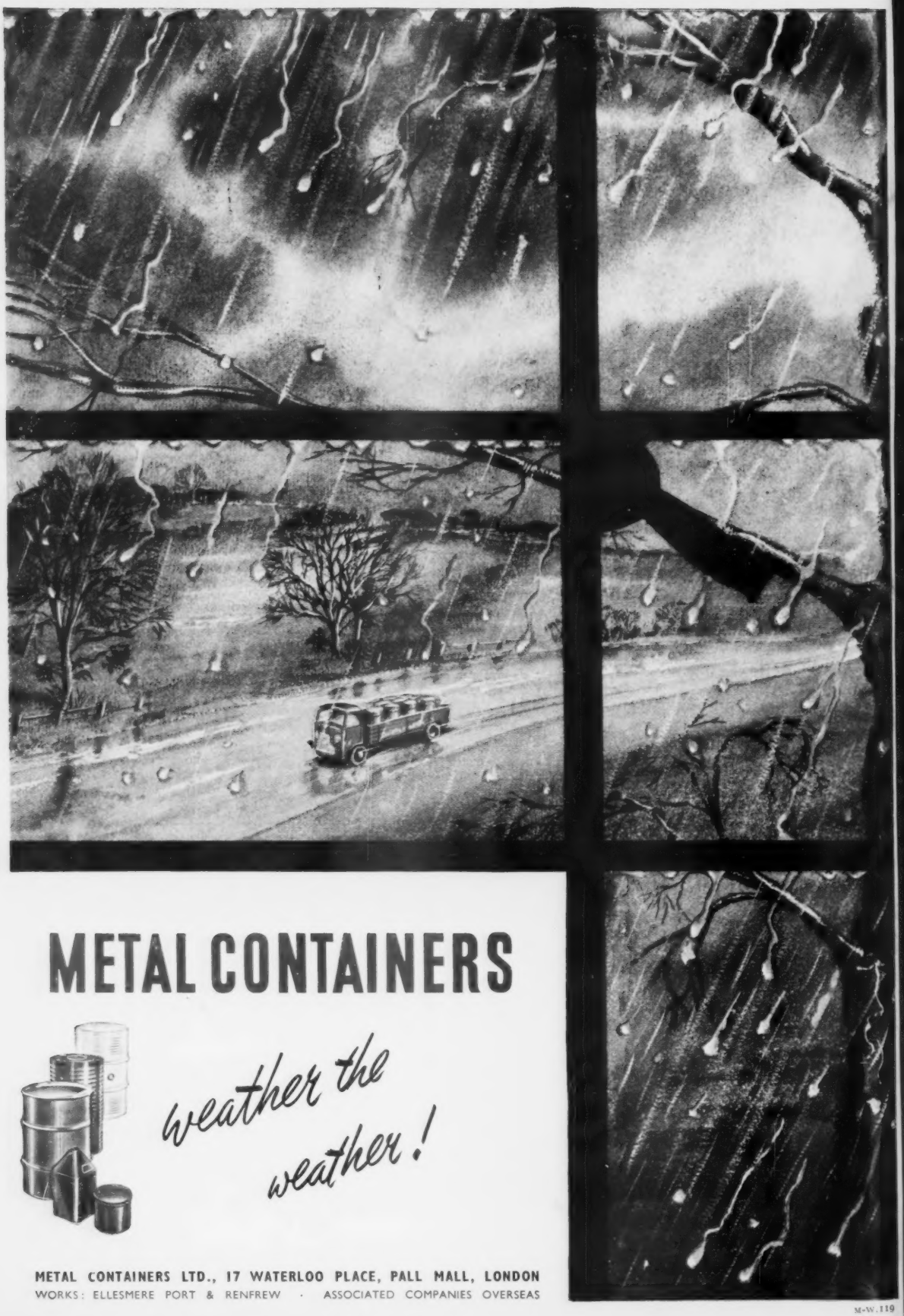

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